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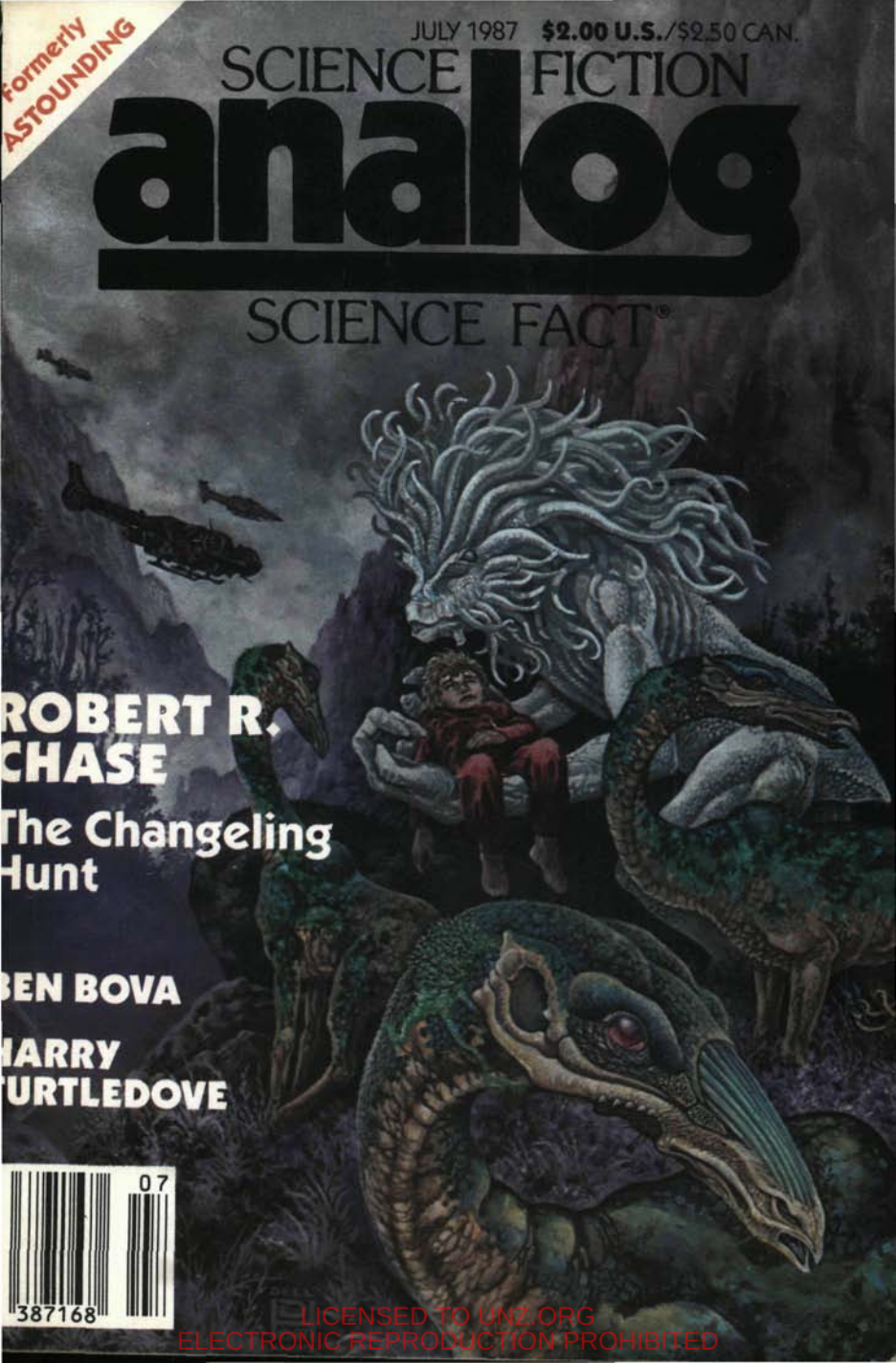

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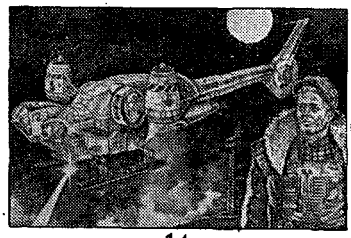

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Editorial

THE REACTIONARY REVOLUTION

Stanley Schmidt

The fundamental advantage of language is that it makes it possible to think and communicate about things without having to see or manipulate the things themselves. This capability has made it such a valuable tool that virtually all human beings everywhere on Earth have adopted it. It is perhaps the only tool that everyone uses essentially *all* the time he is awake, and to some extent even while sleeping. With language, a Paleolithic parent could tell his offspring, "Stay away from the cave at the head of the canyon because a saber-toothed tiger lives there and he likes to eat little boys and girls." Without language, the only sure way for Caveman Senior to convey the same information to Caveman Junior might be to take him there to watch a demonstration or two. This, however, is risky for both Senior and Junior, and a traumatic (though vivid) way for Junior to learn. Furthermore, Junior is not likely to have so many siblings that they can be casually sacrificed to make a point. The survival advantage of language is obvious. Despite what editors keep telling writers, sometimes telling *is* better than showing.

Furthermore, when language becomes more sophisticated, it enables people to talk not only about concrete things which are not present, but about abstract concepts which can't be seen or physically handled even when they *are* present. It makes it possible to say things like, "Sacrificing siblings to saber-tooths to demonstrate their danger-

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ousness is neither necessary, economically practical, morally defensible, nor good parenting." The survival advantage of that is not quite so obvious, but most people who think of themselves as civilized (another highly abstract concept) would agree that the ability to talk about such things is a desirable and useful one.

The fundamental disadvantage of language is that once people have learned to think by manipulating symbols rather than objects, it is very easy to fall into the habit of reacting to the symbols as if they were the realities they represent—even though they are not, and tend to acquire all kinds of emotionally loaded connotations. It would be interesting to know just how early in the evolution of language some people realized that this fact could be used as an instrument for manipulating people and obtaining power over them. I feel reasonably sure that this happened quite early and played an important role in establishing social structures. If language was ever simple enough that its main concerns were concrete things like "saber-tooth," there was little room for disagreement or change in people's understanding of what such a word meant. But when it deals with subtle, elusive concepts like "honor" and "morality," it is quite easy for people to have different ideas of exactly what they mean—and for the prevailing interpretations to shift gradually with time. A would-be leader who understood this could learn to choose words to describe his own actions and aspirations, and those of his opponents, in such a way as to make his listeners feel favorably disposed toward one and unfavorably toward the other. This process could in turn lead to shifts in the connotations and even the basic meanings of words (e.g., what kind of behavior is "honorable"?), so that later would-be leaders would have to manipulate them somewhat differently to achieve their ends. But manipulate them they would, and I would hesitate to guess whether words or swords were overall the more important weapon in the power struggles that fill history books. But I do know that both remain quite prevalent and influential today.

It may be that in the early days of language, generally understood meanings and connotations were more fluid than now because there was no permanent record or central authority to establish a common basis. The invention of the dictionary lent a certain measure of stability—but only to the extent that people *used* the dictionary. In a culture where education and literacy are restricted to a privileged few, dictionaries and even congresses convened periodically to standardize a language (as happens, for instance, with Spanish) have little effect on what the general populace actually speaks and understands. With good communications and high literacy, as in this country, it might seem that a stable basis for mutual understanding could be established and maintained, and this is probably at least somewhat true (though modern communications also let changes in language spread more rapidly and widely than before). Nevertheless, the mean-

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ings of words and attitudes toward them continue to change, and politicians and special interest groups still direct and use those changes to further their own ends.

As a case in point, consider the innocuous-looking word "conservative." In the last few years, "conservative" has come to be widely regarded as a Good Thing to Be. To someone who has watched a few swings of social pendulums, this is a fairly predictable reaction to a period that saw an unusual amount of social experimentation, much of it in the direction of increased freedom of personal choice in personal matters. Now many people have become uncomfortable with that because (also not surprisingly) not all of the results of the experimentation have been everything everybody might have hoped. So there is fear, and those who are afraid have tried to "put on the brakes," both through their own efforts and those of

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groups they belong to and through the election of officials sympathetic to their aims. The movement has been quite conscious, and we've all heard it described in such terms as "the great conservative revival." And since Conservatism is In, anyone who can present his cause as a conservative one thereby enhances his chances of winning popular and governmental support for it.

But is the conservative revival really conservative?

Let's look at some of its manifestations, both in and out of government. One of the earliest overt moves was a campaign to get organized prayer back into public schools. More recently we've had the militant antipornography movement, with both private pressure groups and governmental bodies like the Meese Commission and the city of Indianapolis trying by various means to suppress certain kinds of printed matter—and some publishers and distributors voluntarily yielding to such pressure before it became outright censorship. We've had several court cases involving efforts to keep schoolchildren from being exposed to certain ideas—or to force them to be exposed to others. We currently have a mania for compulsory drug testing in a wide range of work situations. And, of course, a vigorous movement to recriminalize abortion.

The list is by no means exhaustive, but I think it is a fair sampling of the more conspicuous and important campaigns being waged under the conservative banner. Now let's see what the dictionary has to say.

"Conservative," of course, like almost any English word, has several generally recognized meanings. The ones which apply most directly to this context are given by my Webster's New International unabridged as follows: "Tending or disposed to maintain existing institutions or views; opposed to change or innovation . . . Designating, of or pertaining to, or characteristic of, a political party which favors the conservation of existing institutions and forms of government."

If you read that carefully, and then look back at that list of current "conservative" goals, I think you'll notice something peculiar. *Not one of them has anything at all to do with conservatism!* Conservatism wants to keep things as they are. All of my examples want to change things, usually in the direction of institutions and views which used to prevail but don't anymore. The prayer-in-schools advocates want to reinstate something which used to be common but was expressly abolished quite some time ago. The antipornographers, evidently terrified of words and pictures, want to reinstate a censorship that used to be taken for granted but hasn't been allowed for quite a while. Those who want to get evolution and feminism and racial and religious tolerance out of the schools (and creationism in) want to get back to an intellectual climate that many thought had long since been exterminated—though at least one of their means for doing this involves a radical innovation in how teaching is done. Widespread mandatory drug testing also involves a radical change in the relationship between governments or employers and individuals, though even that change is in the general direction of amounts of interference which used to be tolerated more readily than they

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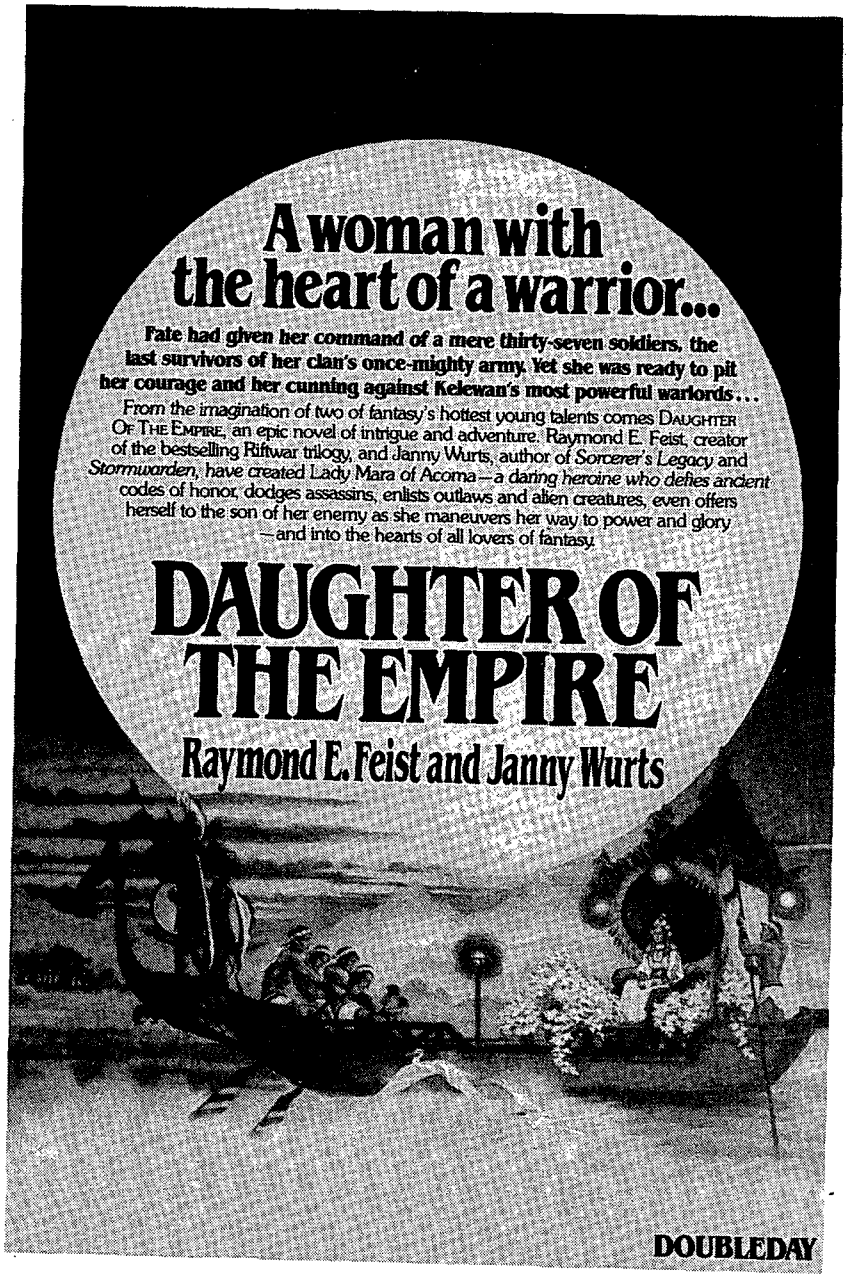
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have been lately. The antiabortionist movement is clearly and openly aimed at restoring a legal situation that did exist and was consciously and deliberately abolished.

What *none* of these movements wants to do is conserve anything in its present state—which is what conservatism means.

Therefore the "conservative revival," quite simply, isn't. So what is it?

Well, there's a little of the revolutionary about it. "Revolution: A total or radical change; as, a revolution in thought. . . . A fundamental change in political organization, or in a government or constitution; the overthrow or renunciation of one government or ruler, and the substitution of another . . ." Admittedly I haven't heard anybody suggesting the actual overthrow of an entire government or constitution, but all of the movements would like to overthrow at least one specific institution or piece of law. (Please note that violence, or the lack of it, has nothing to do with the definition.) And at least some (such as drug testing) seem to involve, at the very least, radical reinterpretation of specific constitutional provisions.

But the definition that really fits most of them to a tee is this one: "Of, pertaining to, characterized by, or favoring, reaction or return to the older order."

The word being defined is *reactionary*, and *reaction* as used therein is further defined as, "A counter tendency; movement in a contrary direction . . . esp., in politics, a movement or tendency towards a former political or social condition, policy, or form of government."

You will note, I think, that that describes the avowed goals of the movements we're considering extremely well. The "conservative revival" would be far more accurately described as a "reactionary revolution."

Please note carefully: this is not a value judgment. I have carefully avoided (this month, at least) expressing any opinion about the positive or negative *worth* of these movements. My argument has been entirely semantic: I have merely compared their goals to past and present realities, and then compared the relationships I found to the accepted definitions of several words, to see which definitions best described what is actually being sought. And the answer is that "conservative revival" doesn't fit at all. "Reactionary revolution" does.

So why are its proponents calling themselves "conservative" rather than "reactionary"? Very simple: "conservative," at the moment, has strong positive connotations, presumably because many people feel themselves in danger of losing things they value, and want to take measures to prevent that—in other words, to conserve those things. "Reactionary," on the other hand, has practically always carried negative connotations. Who wants to be characterized as "one who seeks to undo political progress"?

"Progress" is itself a heavily loaded word, of course. A man or woman who wants to repeal a political change made twenty or thirty years ago clearly doesn't believe that that change *was* progress —and he may well be right. Not every-

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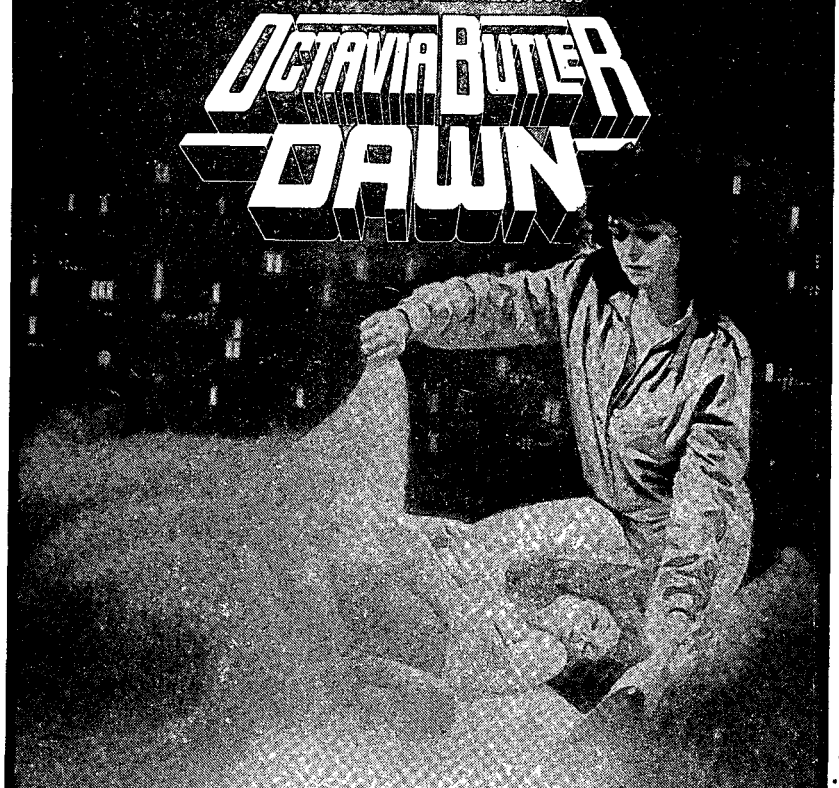

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thing done in the name of progress is necessarily an improvement, and some may deserve to be undone. But if he introduces his campaign to undo it by calling himself a reactionary, people are unlikely to stick around and hear what else he has to say. Far better (more effective, anyway) to call himself a conservative and talk as if the law he doesn't like hasn't really already happened, but merely threatens to destroy something that still exists and he wants to protect.

But when he does that, his listeners should realize that their emotions are being manipulated by a subtle pretense, and the manipulator is trying to nudge a useful word away from its well-established meaning. If they let him get away with it long enough, the old meaning may be generally forgotten and a new one generally accepted. At that point I'll have to buy a new dictionary—and hope that it's come up with new words to take over the old and important functions of "conservative" and "reactionary." And the language will be a little poorer, because "conservative," far from having anything to do with conserving as its roots suggest, will mean adhering to a particular set of beliefs, regardless of whether they are currently fashionable or not.

When a professional magician performs, an integral part of his act is patter: a steady stream of talk designed to divert enough of the audience's attention so they won't look too closely at what he's doing with his hands.

When a politician or demagogue talks too much about freedom, conserving traditional values, building a better tomorrow, or any other high-sounding ideals, watch what he's *doing*. He just may be trying to distract you so he can put something over on you. ■

● A man can believe in a considerable deal of rubbish, and yet go about his daily work in a rational and cheerful manner.

Norman Douglas

● The savage bows down to idols of wood and stone: the civilized man to idols of flesh and blood.

George Bernard Shaw

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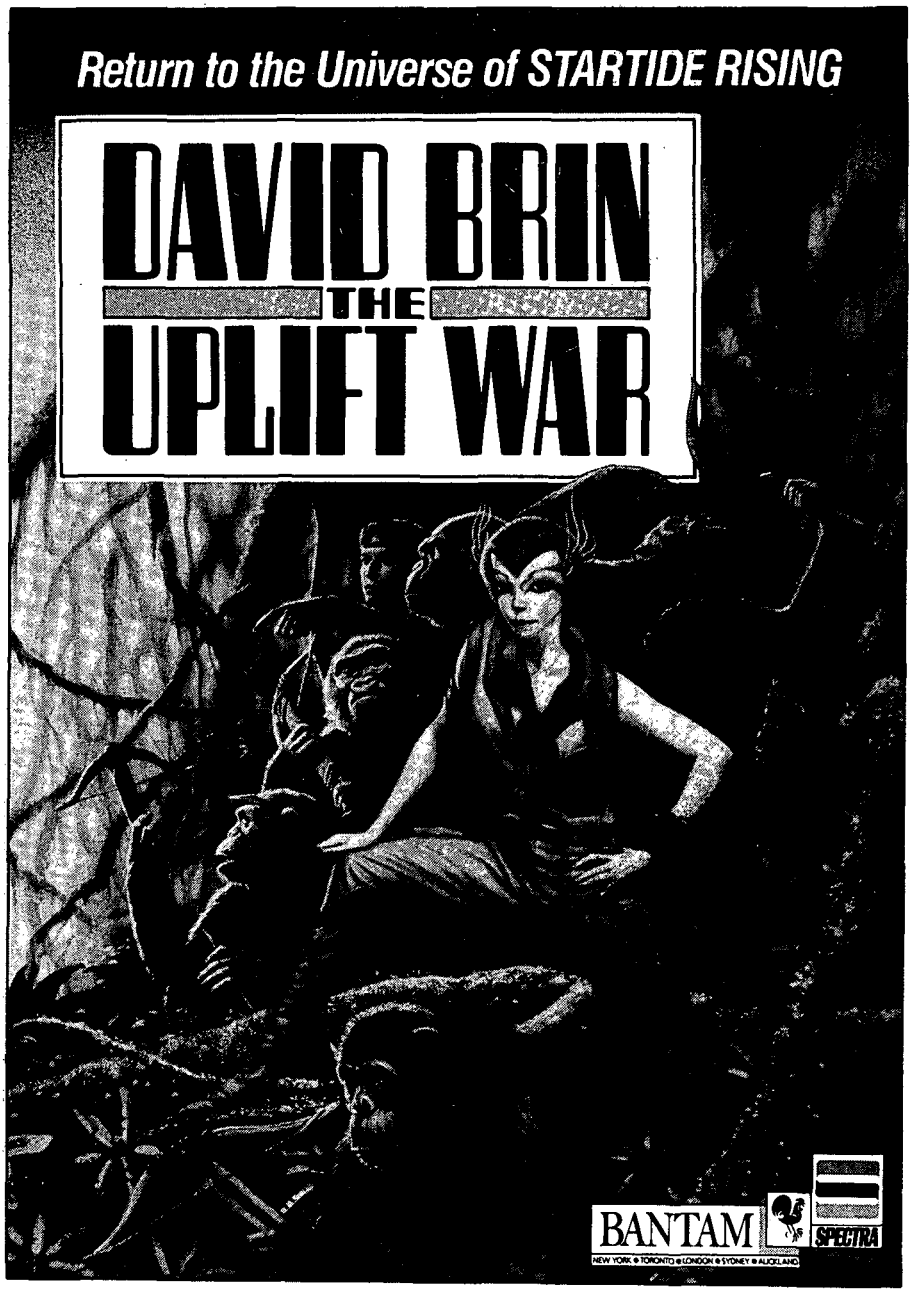

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Park Fitzhugh-Watanabe found an unoccupied square foot along one wall of the Bainbridge-Keating gathering hall, and allowed himself to sink down in relief. His legs still rocked with the rhythmic surge of the vetol. It had plucked him from the small holding he was farming—trying to farm—and set him down on this leveled crag which rose sheer from the planet-wide cloud carpet. He worried about the two Jones-Bishop boys who were looking after his holding, but there was really no way a citizen could ignore a Survival Priority. Especially when the Freeholder needing help was his uncle.

The room was packed solid. Their coveralls and the sharp scent of their sweat marked most of these men and women as aggies like himself. Their talk, about stock strayed over the edge, aboflora breaches of the cordons, attacks by bloodbirds, confirmed it.

"Always knew Bainbridge-Keating would get in trouble with this spread," one of his neighbors opined.

"What do you mean," his friend asked. "This is one of the largest, richest freeholds in the Maremount range."

"Too low," was the reply, "Too near the Mists. All sorts of things could come across the cordons."

There was a stir at the far end of the room. At first, Park could see only the needle-pointed geneology, starting from the Founding and running to the present day, carefully showing how all the names had been preserved. Then the crowd rippled apart to let Mary Bainbridge-Keating through. She nodded briefly at Park and several others as she stepped over to the holo console.

"Thank you for coming," she said shortly. Her eyes were dark with exhaustion. There was the slightest tremor in her voice. Park could suddenly feel all the bonds of self-control which were, only just, holding her together.

"This morning at 0270 hours, we were awakened by the sound of breaking glass. It came from the room of our seven year old, Hamilton. His window had been completely torn from the wall. I could see figures disappearing in the darkness beyond. In Hamilton's bed was—this."

She touched the holo console. An image of Hamilton appeared, floating in the air. Something about the way he held himself was indefinably awkward. His facial expression poised uncertainly between—was it fear?—and maniacal amusement.

But that, Park realized, was an illusion caused by a total unfamiliarity with human body language.

The image had been steadily enlarging. Now he could see that the tendrils of "hair" joined each other to form a dark brown tissue on top of the scalp. The eyes did not always focus together—one or the other would dart off independently to inspect some distraction beyond camera range. The face itself, on close inspection, was composed of large pores separated into pentagonal cells. . . .

The image vanished.

"You have responded to our Survival because we needed help. We thank you very much for that." Aunt Mary took a deep breath, steadying herself. "As you see, however, this is much more than a family disaster. There is something on this planet of which we have had no inkling until now. Unless we get

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Hamilton back, we may not recognize the next copy they give us.

"That's about it. Kent has been tracking the creatures that took our son for the past ten hours. Right now, you are going to be assigned task forces to help him. Good luck, and God bless all of you."

Five men in various parts of the room began calling out names. Park heard his own, and made his way through the throng to where a short, fringe-bearded man leaned on his hands over a small table. A knot of men already surrounded him. He looked up from his list and nodded as Park identified himself.

"Name's Bedford Davidson, second foreman of this freehold. You all can introduce yourselves in the vetol. We don't have time just now."

He tapped a relief map on the table. "Boss' as been trackin' the gremlins most of day now, closin' the distance bit by bit. Come daylight, they dropped down into this network of ravines, so the vetols weren't able to leapfrog the way we'd planned it.

"Twenty minutes ago, Boss radioed his position from here." His finger indicated the last branching of the ravine system. "You kin see, they're headin' for the edge. We got the honor of meetin'm just this side of the cordon. We'll be to their front; Boss'll come up from behind."

He looked up from the map, giving each one of them an appraising stare. "One thing I gotta make time for. I think I know all of you, one way or another, know at least that you're pretty independent folk. Since the Founding, nobody on this planet had heard of armies or militias outside of history books. That's good, but it means we don't set much stock in discipline. I'm talkin' fire control. We're not out on a scientific expedition here. Much less a mission of vengeance. We're tryin' to get a young kid back alive from things we never knew existed. When we meet them, nobody fires, unless and until I or the Boss gives the word. You got trouble with that, you kin stay behind."

He waited a moment for objections. "Okay. Out to the vetols."

Vetol jets strained to lift the overloaded craft into the air. Park clutched hard on his strap, trying to keep from being slammed against the wall as the pilot challenged contrary winds. Davidson saw his expression and grinned.

"We're gonna keep low," he shouted in Park's ear. "Hope the hills will deflect our noise as well as hide us. Don't want the gremlins to catch onto our plans."

If this was meant to be reassuring, it failed. Skimming the depressions left little leeway for downdrafts.

The flight continued, punctuated by upward surges and stomach-wrenching falls. The light, which had been slanting down from the cockpit, began a ninety-degree traverse of the men in the cargo hold. Three times the engines changed pitch, the vetol swung side to side in gradual descent, then suddenly strained desperately upwards.

Aborted landings, Park thought, biting his lip.

The jar, when it came, nearly ripped him from his strap. The wall fell away, becoming a ramp.

"All right," Davidson said, in the sudden silence. "We're gonna set up

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our positions. We may have a while to wait. In the meantime, be quiet. I'll be in contact with the boss. Anything you need to know, I'll tell you."

They trotted quickly across the bare gravel of the cordon. Behind them, the vetol thundered into the sky. The jets swiveled from vertical to horizontal, and the craft darted out over the abyss. Directly in front, a gentle slope led down to what remained of a pre-Founding ravine.

Even twenty years before, when Kent Bainbridge had picked this mountain off a survey map to be the site of his freehold, it was realized that no matter how thoroughly you planed a peak, sterilized it, mixed in the proper trace element fertilizers, it would all be for nought if your soil proceeded to wash away down the mountainside. So they left a lip of rock around the cordon edges, cutting down and in to make a bowl capable of holding all this expensively enriched dirt. Streams were dammed up and rerouted into reservoirs.

Davidson placed Park and five others at the base of this blocked stream. He trotted back out to position the other groups along either side of the ravine.

Park made himself as comfortable as possible behind his boulder, rechecked the charge of his rifle, examined his field of fire through the siting scope. It was utterly still. There were occasional scraping sounds as the men to either side stretched to avoid cramps. The roar of the winds over the drop-off sounded very far away.

There was plenty of time to think. How was Davidson going to exercise fire control if he didn't even have line of sight with Park's group? Without that command, how could Park and the others defend themselves, much less rescue Hamilton? Was the boy still alive?

An odd clump of purplish-blue caught his attention. Small, curling spikes, topped with a yellowish fringe, pushed their way up between the rocks, questing for sunlight.

Native growth, Park thought with dull surprise. Never before had he been this close to the native flora of the planet. A spore must have been blown over the drop-off and fallen into this ravine, where it was relatively well-protected from the periodic sprayings of poison which freshened the cordons.

Park shook himself back to alertness. His watch read 1314. This was the first chance he had to relax since receiving the Survival. He was also getting hungry. He wondered if Bainbridge-Kent or any of his helpers had considered feeding the troops.

Shadows crept up the wall of the ravine. Park kept his eyes low, saving his vision for the cool dimness of the bottom.

"Park!" the radio at his waist squeaked. "Get your men up here, quick-time."

Park scanned the ravine wall, noting protrusions in its nearly vertical surface. Almost without consideration, he began moving upwards. Near the top, an earshattering roar caused him to miss a handhold. He spread-eagled, halting his fall, then moved up more cautiously.

Davidson was standing near a cooling vetol, talking to a pilot Park had never met.

"Couldn't do a damn thing," the pilot was saying. "They came out of the ravine and made straight across to

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the drop-off. Bainbridge-Keating was at least fifteen minutes away. Tried to set down in front of them, hopin' noise and jet blast would scare 'em back to the ravine."

He shook his head in disgust. "Just parted right around me, and over the edge."

Davidson waved the men around him into the cargo hold. Park stood in front of him.

"*My* men?"

Davidson broke off his conversation with the pilot. "Yeah," he said. "We had a quick radio conference on organization. You're whatcha call a squad leader. Don't let it go to your head."

This flight was a quick hop. Coming down the ramp, Park had to squint against a sun that had become a flaming orange eye on the horizon. A mount too small to be worth planing rose sheer and purple from the cauliflower clouds.

He turned away from the drop-off. Tents were going up on the far edge of the cordon. Dogs raced across the gravel, jumped up to sniff him all over, then ran back to the man who was calling them angrily, yelping joyously all the way.

Bainbridge-Keating stood with his eldest son, Davis, in the midst of men and women wearing pilot's blue.

" . . . don't know how they could have made it across the gap." his uncle was saying, "but the important thing is that there is a flat area more than three meters wide on the other side. If you can drop us down there—"

A woman with shiny brown skin and hair liked cropped steel wool shook her head decisively. "Can't be done. We're in the Twilight Calms now. Any minute, the downdrafts will begin. Smashing a vetol into the rock face won't do anything for your son. Half an hour, we won't even have any light."

Davis started to contest this, but his words were drowned out by the roar of an arriving vetol. Park held his hat brim over his eyes and leaned into the wash from the jets. A single man climbed down the cockpit ladder. He was nearly two meters tall, broad in fleshy thighs and paunch, narrower towards the shoulders. Save for a colorless fringe of hair he was bald. He bore more than a fanciful resemblance to a stubby rocket.

He spotted Bainbridge-Keating and made his way over in a land-devouring stride.

"My credentials, Freeholder," he said, extending a card. "I have come to join the search."

Kent ignored the proffered card. "This isn't a revival meeting," he said, noting the mauve shirt and white collar. "And as far as I know, the gremlins aren't of your persuasion."

The stranger blinked with embarrassment. Park felt a sudden, involuntary sympathy.

"Ah, I am not here in my clerical capacity. I am Dr. Reiner Leatherwood. Fifteen years ago I was the youngest member of the Lockard-Sayilli land traverse. I have more experience in what you are likely to run into than almost anyone else on the planet."

Kent took the card, frowned momentarily, and stuck it into one of his pockets which crowded themselves onto his coverall.

"This isn't a scientific expedition either. The folks in this company, I've

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known every one of them for years. Know their strengths and weaknesses, know I can trust them. No offense, but I've never seen you before in my life."

He turned away. Leatherwood's cough was apologetic.

"Excuse me, Freeholder," he said. "I am here as a representative of the General Court. By statute, all Survival Priorities invoke the jurisdiction of that body and are technically under its control. I have full authority to take command of this company and the entire Survival."

Kent swung back, face working with surprise and the beginnings of anger.

"If I may say so," Leatherwood continued, "your Master Pilot is quite correct. Close-in flying along the cliffs would be disastrous now. We can resume the hunt tomorrow morning. The vetols will more than make up for the time we lose."

"Are you taking command?" Kent asked evenly. His eyes flicked quickly to the men around him, then back to Leatherwood.

"No, sir," Leatherwood replied. "I am merely offering my advice. As I was sent here to do."

Their gazes locked, Leatherwood meeting Kent's anger with a wide-eyed sadness. Shadows swept across them as the sun fell beneath the clouds near the horizon.

Kent's nod was almost a spasm. "All right, then! Tomorrow at dawn."

Swinging in harness beneath the vetol, Park felt the roar of the down-turned jets shaking the air apart. Marion was delicately manipulating the controls, increasing his swing beneath the length of the craft, carefully keeping him from the jet wash. The trail was a barely-visible line against the rock wall, clearly too narrow for landing the vetol, barely wide enough for a human being. They could have come this far on foot, but that would concede a nine hour lead.

Clouds rushed by beneath his feet, then the ledge and the men already there, their arms waving, their mouths working in vain against the noise. Park ignored them, fixing his eyes on Davidson's upraised arm. The arm dropped. Park forced his fists open, convinced for an instant that he had waited too long, that the backswing was hurling him in an ever-steeper arc into the white, fluffy emptiness.

Then the ground slammed his knees into his chest, collapsing every ounce of air from his lungs. He catapulted forward into waiting arms.

As soon as he had his breath back, and the bones in his legs had become solid again, he turned to help catch the next member of the team.

Kent had already gone ahead with his group. Davidson gave the order to move out, then looked back and gestured at Park. Park could not understand the words. He had just pulled out his earplugs. The inside of both ears still ached from the pounding they had received from the departed vetol. Looking in the direction Davidson was pointing, he saw Leatherwood far behind them.

Deciding not to force the issue of the cleric's legal authority, Kent had allowed him to accompany them. He had assigned him to Davidson's group to keep him as much out of his own way as possible. Following suit, Davidson had made Park responsible for him.

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Now, just as Kent had feared, he was lagging behind. He lay stretched out on the ground, parallel to the mountainside, head projecting over the void.

"This is fascinating," he said as Park came up. "You can see the remains of the vines which were pounded into the ground, and along the side of the wall, and I think you can even see traces on the far side. Over there is as far as Bainbridge-Keating got by foot yesterday.

"Effectively, they had a net bridge there. It must have taken several days to construct. Then, when they crossed back, they pulled it apart."

"Smart," Park said, trying to make it sound impatiently sarcastic. It did not come out that way.

"Precisely."

They hurled along the downward-sloping ledge, trying to catch up with the rest of the hunting party. Sporadic cross-talk erupted from Park's radio. Several pilots were scouting the mountainside, trying to obtain visual contact with the gremlins. Some were using infra-red sensors with indifferent success: as the mountain heated with the rising sun and the higher mists dispersed, the mountain was becoming a shimmering mosaic of warm, out-thrust rocks and cooler shadows. From patches of conversation, Park gathered that Kent was hoping to try a pincers movement again. Failing that, the vetols needed a flat piece of land to bring in supplies.

The mists had always seemed a solid, rolling carpet stretching to the hard blue of the horizon. No more. Large, fluffy clouds boiled up from the depths. The eye was drawn through the gaps between them, missing pieces of aerial mosaic, and down thousands of meters to the next layer. Yet even this was not completely solid, and through these rifts Park could see, indistinctly, a darkness that might be jungle.

At mid-morning, the entire party came around a corner of the mountain. Here it descended in a forty-five degree slope of large rock ledges and fields of stony rubble. The dogs with Kent were yelping in high-pitched hysteria. Park searched the rocks for the reason. A cloud crouched along the bottom of the slope. Several ungainly forms were lurching into the fog. On one of them, Park saw the flash of a white arm, a shock of yellow hair.

Scanning the zigzag path the dogs were following, Park decided almost without knowing it. He jumped off the ledge. Nearly two meters below he fell into a crouch and began loping downslope. He held his rifle above his head, throwing it from side to side to maintain his balance. Stones clattered away from his feet, multiplying as they bounced and rolled so that it seemed that, as fast as he went, the rest of the mountainside kept up with him.

A foot slipped on reddish-yellow slime. Park went down, flipped onto his back, and kept sliding. Something caught him, and he rolled to a stop atop a long, large boulder. Hearing the racket of stones coming down behind him, he forced himself to his feet and jumped on down.

Abruptly, he was at the edge of a further drop-off. Leatherwood was about a meter to one side, not even breathing hard. The other members of his squad were trotting down behind him. At least two were still on the slope, nursing knees or ankles. Rocks slid and ric-

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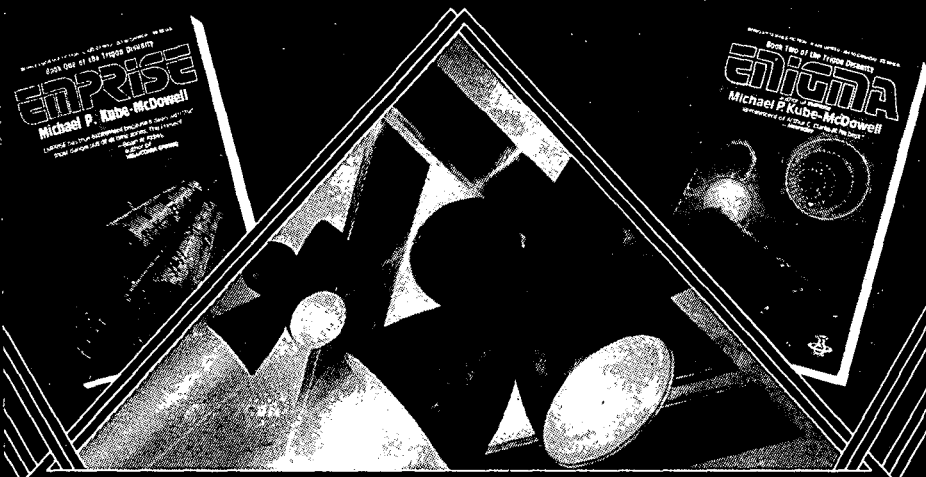

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ocheted all around him, two bouncing up against his legs.

The dogs, coming up with Kent, shied away from the flying shards, barking their displeasure. Kent gave him a tight grin, and pointed over the edge.

Without passing through any clearly defined boundary, they had entered the cloud. In every direction, the world became gray and indistinct with distance. Looking downward, Park at first saw nothing. Then there was a movement, gray against gray, on what must have been a lower ledge.

"Stop them," Kent said. "Or at least cause enough delay for me to catch up."

Davidson, who had just run up, nodded breathlessly, and gestured Park and the rest of his men into position. Park lay down to brace his elbow against the wet granite. There was a soft, metallic whirr as Leatherwood's camera lengthened itself into focus.

"Shoot ahead of them," Davidson ordered.

Park sighted two meters ahead of the line of shambling quadrupeds and depressed the firing stud. A gout of steam was followed by a sharp *crack!* A concatenation of small explosions pockmarked the ledge and nearby wall.

The creatures milled uncertainly, bunching up in confusion. Slowly, they gave ground. Park let his shots creep closer. Kent and the rest of the forward party would have them in just a few minutes more.

Then something white seemed to —slither between, swing alongside? —the quadrupeds, gesticulating, slapping at their sides in a quick, complicated rhythm. For an instant, a face looked up at them. A spiked mane surrounded pinhole eyes and a line that must have been a mouth. The quadruped carrying Hamilton, seemingly asleep, was urged to the front of the line.

Park picked a piece of ground and fired desperately, as quickly as the arming light blinked red. If nothing else, the stone should become too hot for the feet of these creatures.

They moved steadily forward, as if daring him to shoot them. The creature with Hamilton moved into his sights. Park bit his lip, wondering if he could drop it where it stood, without it sliding over the precipice.

He was still wondering as it moved deeper into the mists and disappeared from sight.

The curvature of the tent wall distorted the camera's projection. Leatherwood tapped the keypad atop the metal housing.

"These new models have a chip for image processing," he murmurred. "I should be able to eliminate the fog."

The image cleared. Movement. The quadrupeds plodding forward. Hamilton raising his arm across his forehead and letting it drop. For an instant, Park could see the boy's face—smiling, as if with the sweetest dreams.

"There, that movement clearly was not caused by jostling," Leatherwood said. "That proves he is still alive."

"He's bleeding," Kent said, his voice tight.

Leatherwood froze the frame, enlarged it. "Surface cuts," he said. "Our own laser blasts were exploding rock in every direction. Nothing looks serious."

"What's that on his head?"

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The frame became fuzzy with further enlargement. Park could barely discern a greenish-tinged darkness, which he had earlier dismissed as shadow, spreading from the base of the skull and beneath the jaw.

Leatherwood paused. "Some sort of fungus, I think. Dr. Sayilli noted similar growths on numerous animals during our traverse. None seemed impaired or discomforted by it. In fact—"

The image jumped and froze again, this time on the foreparts of a quadruped.

"That dark collar on this one is probably the same thing. In fact, I think they all do."

"Long necks," Kent observed, "with heads hardly any thicker. Must be dumb brutes."

"That may be deceiving," Leatherwood said softly. "The head is used almost exclusively to house eyes and ears. The brain is located in the main body, at the base of the neck. Even the main feeding apparatus—"

Again colors rippled across the side of the tent too quickly for resolution. Leatherwood stopped it at a frame shot from the top of the rubble slope. A quadruped stood silhouetted against bright fog. The image zoomed in on the animal's lower quarters.

"Cows?" Kent asked, squinting uncertainly.

"No, and those are not teats," Leatherwood answered. "What you see is a tenticular feeding apparatus. They strip lichoss from the rocks. Professor Lockard noted several examples of similar herbivores. They are completely harmless, as far as we can tell."

"They're not what I'm interested in."

Obediently, Leatherwood called up a different part of the camera's memory. Once again, that white-maned face fixed Park with a shrewd, appraising stare. Aside from one shot of a hand with fingers which appeared abnormally long and thin, magnification and image processing had produced little increase in detail.

"This creature is completely new to us. The mane is frustrating. I cannot decide if it is fleshy, part of a hard exoskeleton, or an arrangement of scethers, like on a bloodbird. It makes judging the cranial capacity difficult. My estimate is around 750 cubic centimeters. Just about the human norm."

"It knew where we were," Kent said, echoing Park's thoughts as he studied the picture. "It knew what we were doing, and it knew we were bluffing."

"That is a reasonable speculation," Leatherwood admitted. "Of course, we have no way of verifying it."

He flicked off the power and began shutting the machine up in its case. "I am going to see Krenitsky. If the ionosphere has calmed down enough, I will send this data to Newstart."

Kent held up a hand. "Don't let anybody see that. Park is family: I know he's steady. Some of the others, though, are getting nervous about being this far from the cordons. I don't want them needlessly upset."

Leatherwood looked grave. "There is no need for anyone else to see these," he agreed. "As soon as I confirm transmission, I will erase the memory to make more recording room."

Kent nodded his thanks.

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Park followed Leatherwood out of the tent, careful to step over the dogs that lay drowsing by the flap. Wet coldness slapped his face, invaded his nostrils. It was utterly dark, save for the lights which shone through the tents like translucent pumpkins. The ground gleamed icily from the freezing mist.

"Tell me the truth about the fungus."

Leatherwood's face was unreadable in the dimness. "I have told the truth." His voice, though mild as usual, was obscurely troubled.

"Tell me the rest of it."

Leatherwood let out a great, gusty sigh. "I only thought, as the Freeholder himself would say, that there was no point in causing undue distress.

"We picked up specimens during the traverse. Some were skeletons of creatures long cleaned by scavengers. Several of the skulls had holes which had been made, and partially healed, while the creatures still lived. It was proposed that the fungus somehow sought access to the host's brain. This was merest guesswork, of course."

Finding Krenitsky's tent, Leatherwood excused himself. Park half-walked, half-slid to his own tent. He crawled into his sleeping bag in the dark, careful not to disturb the blissfully snoring Davidson.

He closed his eyes, wondering where Hamilton might be. Without a sense of transition, he found himself seven years younger, solemn and excited at the prospect of being god-brother to the wide-eyed, chubby infant who had been thrust into his arms. Then the priest came, and Hamilton gave a startled cry as the cold water splashed three times across his forehead. Later the family geneology was officially presented to the witnesses, Hamilton's name newly-sewn on the bottom. "The names are preserved," Kent Bainbridge-Keating announced. "The names are preserved!" the guests responded, raising their glasses to this newest member of the human race.

The rocks were dark the next morning with melted ice. Park looked up through two distinct levels of clouds to a sky that was visible only in long, blue gashes.

The party wound down the mountainside. Isolated clumps of blue and purple foliage clung to cracks in the rock. For the first time, they could see the jungle rising below them. Erratic updrafts bore its scents to Park: disturbing, unidentifiable, yet exciting.

Sawflies flew up to greet them, their wings spherical blurs of noisy, purplish black. They rose, as if in astonishment, when the dogs snapped at them. Vetols darted in the distance, like larger cousins of the sawflies.

The first trees were tall and narrow, widely separated, with leaves like long, twisting ribbons. Lower down were trees topped with folded triangular leaves, living sunbursts as they caught the light. Crown of thorns, Leatherwood called them. Then they were below the canopy, and you could not talk of the jungle as a whole anymore, but only of the few meters visible in front of you. Branches writhed and twisted in every direction as the plants strove upward to the light. Huge trunks served as miniature plateaus, complete with bushes which grew on rain-deposited soil, and small creatures who betrayed their presence only

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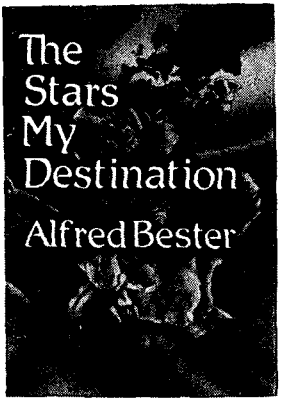

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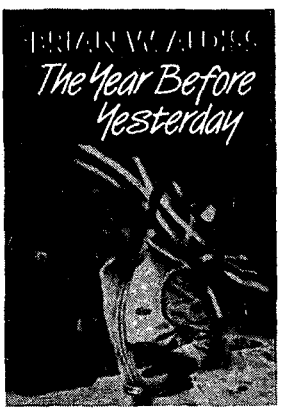

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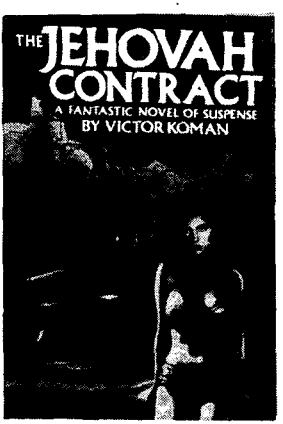

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by the rustle of foliage as they darted away from the advancing men. Darkness deepened as they descended, the leaves themselves becoming almost black, so as to suck in greedily any stray ray of sunlight which might fall on them.

The air had changed as well, from the sharp, spicy sweetness of the upper levels to a damp, pungent mustiness at the floor. Looking upward, Park saw sunlight reflecting off, shining through, leaves and flowers of every conceivable hue. It was like walking beneath walls of shifting stained glass.

Despite the pack straps which chafed his shoulders, and the fact that this was the third day on the trail, Park felt well rested and strong. As if to make up for the dimness, his hearing seemed to have become unusually acute. He could hear men talking at the head of the column almost as clearly as if they were right next to him.

Leatherwood nodded when Park mentioned this to him. "Down this far, the air pressure is half again that standard at settlement levels. Sound travels with less attenuation. Oxygen forces its way into the bloodstream more efficiently. That is why you do not get winded."

Park frowned. "That sounds good. There aren't any side effects?"

Leatherwood shrugged. "A couple of men have already burned their mouths." He smiled at Park's look of incomprehension. "The higher the pressure, the higher the boiling point of water. It is easy not to realize just how hot 'steaming' is until it is too late.

"Beyond that . . . there is just not enough data. I have been in contact with physiologists at the University. They tell me that deep sea divers on Earth used to run into a problem they called 'rapture of the deep.' That was at much higher pressures, of course, but at the same time they had close control of the breathing mixture. Not only does the composition of our atmosphere vary with depth, but decay, the exhalations of the plants, and temperature inversions all contribute to mini-atmospheres that vary from place to place in the jungle.

"None of these are known to be harmful. Then again, the Lockard-Sayilli traverse never descended as far as we are now. Dr. Tsui-Halperin and I are both watching for any unusual symptoms.

"Remember, we are still on a high plateau. If we have to go down to the lowlands, where the air pressure is as high as five atmospheres, conditions may become quite exotic."

There was little low-growing vegetation in this part of the jungle. Huge, widely-spaced trunks thrust themselves up from the ground like living pillars. Spider-shaped shadows rushed through the branches above them.

The trail wound around irregularly-spaced pits which pocked the ground between the trees. Leatherwood darted about them all with inexaustible energy, feeding a *sotto voce* commentary into his chin mike. There was little enough of interest, as far as Park could see. Half a million years of decaying jungle had built up the soil beneath them crushing it into porous, water-retaining rock. Whenever the water leached out, the rock lost most of its structural strength. Most of the pits were empty, accumu-

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lating dead branches and leaves. In one pit, they seemed to have been arranged into something like a nest.

Descending a shallow slope, Park saw the rest of the party stretching ahead of him in an elongated S. The lead man in Park's squad, a Freeholder named Regis-Horley, gave a laugh and strode ahead in a straight line, cutting off the curves.

Park smiled. They were more tired than they realized if they had to trace every meander of the quadruped's path. Especially since success depended on catching up with these creatures on their home terrain.

Regis-Horley seemed to stumble. The ground in front of him vanished. There was a wet splash, followed by a muffled yell.

Park ran forward. Two men who got there ahead of him, fell in themselves. They tried unsuccessfully to climb up the slippery side of the pit. Regis-Horley gasped, thrashed about spasmodically, and fell forward into muddy-looking water.

Leatherwood pushed him aside. "Take off your jackets!" he commanded. The men stared at him. "You can pull these two up with them," he explained. "The rest of you, flap them as hard as you can. Get air into there!"

He jumped into the pit. He sank in ooze halfway to his knees. Two sloshing strides brought him to Regis-Horley. He gripped him over one shoulder and under the crotch, and heaved him over the edge of the pit. Staggering to the side, he grabbed at Park's jacket. His breathing rasped loudly through his throat. Halfway up the side, his fingers loosened their hold.

Park dropped the jacket and grasped Leatherwood's elbow. The man was unbelievably heavy. Sweaty flesh slipped through his palms. Park was being pulled out of balance when two sets of arms clamped roughly around his shoulders and stomach, and threw both of them back on the ground.

Park blinked upward at the kaleidoscope canopy. Bainbridge-Keating looked down at him, then addressesd Davidson.

"What the hell is going on here?"

Regis-Horley's eyes flapped open. His face was split along a diagonal line. The wet part had turned bright red, as if badly sun-burned. He sat up, and his pants tore open with a soft, rotten sound. He stared at them in comical astonishment.

"Gut," Leatherwood said. "We were nearly supper."

Kent cocked his head, uncertain what question to ask.

"We noted a few smaller ones on the traverse fifteen years ago," Leatherwood continued. "The creature is basically one huge stomach. It settles in a suitably wet depression, incorporates the water into itself and turns it into stomach acid. Then it grows, taking the shape of its hole. It may start by metabolizing dead vegetation. Carbon dioxide inflates a bladder which eventually rises to the surface of the pit. Dirt covers it over. It is strong enough, when healthy, to support the weight of small vermin. But when something big enough to make a decent meal steps on it, the bladder ruptures, and the unfortunate creature finds itself the object of digestion. The sides of the Gut are almost impossibly slippery to climb. Soon, de-

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prived of oxygen, the creature collapses, and is disassembled into basic nutrient.

"If nature is not so kind, the Gut dries up and blows away as thousands of spores, each looking for a better hunting ground."

Kent and Leatherwood were deep in conversation as camp was being set up, when a three-man delegation, led by Luce Fowles-Grimeby, came over to them. Kent looked up expectantly.

"Freeholder." Luce cleared his throat. "Some of the men have been talking to me. They're worried 'bout what happened to Regis-Horley. They want to know how long we're gonna keep after these creatures."

"As long as it takes to get my son," Kent said mildly, "and not one second longer."

"Don't even know the kid's still alive," one of the men behind Luce muttered.

Davis had been seated beside his father. He half-rose angrily. "My brother—" and stopped, as Kent's hand rested on his leg.

"We have sent on pictures of Hamilton proving that he is alive," Kent said.

Luce looked distinctly uncomfortable. "Wish we could have seen those pictures before they were erased," he said. "They're more than a day old now. I hear tell the boy was bleeding at the time."

Kent's voice was hard and emotionless. "I don't want to keep anyone here against his will. Soon as we get to a clearing, I'll call down a pickup. Or if you want to march back up the mountain, you're welcome to that, too."

"Now that's not the idea at all!" Luce dropped his gaze, shifting his weight. "We don't want to run out on you. But we keep going on, not getting any closer, walking deeper into land never meant for humans. I mean, realistically, that boy's as good as dead, isn't he?"

He looked appealingly at Leatherwood.

The cleric had taken advantage of the interruption to chew on a nutra-bar. He put it down, wiping his mouth with the back of his hand.

"The gremlins do not want him dead," he said slowly, as if thinking the problem through. "They could have killed him back at the Freehold if that were their intention.

"We have come across no remains nor other indications that the boy has died in the last day. I find it implausible, if only for hygenic reasons, that the gremlins would continue carrying a corpse."

"They're pulling us in," one of the men behind Luce insisted. "Never lose the trail, but never get closer either. Guts hidden under the ground and God knows what all around us. And in front of us. It's unnatural and dangerous."

"Dangerous?" Leatherwood seemed to consider the word. "Regis-Horley has first-degree burns over parts of his body. I have seen worse from intemperate sun-bathing. He has undergone the further embarrassment of having to borrow some clothing. His experience was startling, even unpleasant. Given our aid, it was not really dangerous."

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Luce's delegation shifted impatiently.

"However," Leatherwood said, raising his voice, "I will tell you what is dangerous. For four generations, ever since humans came to this planet, we have pretended that we were living on little islands of Earth. We have taken the most desolate parts of this globe, atomically flattened and sterilized them, ringed them with poison, and behaved as if they were all that existed. Maybe a bloodbird kills ones of your stock, or a strange plant takes root at the edge of the cordons. If so, kill it with averted eyes and banish its memory. Or if your best minds mount a small expedition to learn just a little bit about this world, then subject them to a humiliating quarantine when they return, destroying in the process ninety percent of the specimens they have collected—all in the name of protecting human settlements from encroachment by alien organisms. Only it is not alien organisms you fear. It is alien thoughts."

The whole camp had gone silent. Even those who stood or sat with their faces averted, working on their gear, worked silently, fascinated by this uncharacteristic outburst.

"You think that Guts are dangerous? Gentlemen, I hate to alarm you, but this whole planet should be lethal to us. Every time the figures are fed into the computers, the same answer comes out. A planet like Venus before the Burnoff: air pressure at a hundred atmospheres; temperature hovering at the melting point of lead. Obviously the biosphere makes the difference, but how? And what will our mini-ecologies do to the balance?

"Do not deny the interaction between the two. Ecologists have been documenting it for half a century. They even have a term for it: Convergence. Some of Sayilli's bacteria samples taken during the traverse were clearly of Terrestrial origin, slightly evolved to suit their new habitat. New species hem in the cordons, some able to tolerate the old poisons, others actually feeding on them.

"Even humans are part of Convergence. Four generations ago, our race nearly died on this planet because of the difficulty of conceiving and bearing children. Loss of the Moon had disrupted menstrual and other, subtler biological rhythms. That problem has disappeared. We have adjusted.

"There are other changes as well, in health patterns, in alpha waves, in blood pressure averages. Nothing overt, nothing which would make you stand out from a crowd of twentieth century Terrestrials. But, statistically, the changes are significant, and they are accumulating. We preserve the names, but our biological essense is shifting unnoticed."

Leatherwood looked around and blinked, as if suddenly abashed. "The Guts are not dangerous. Our self-willed ignorance is the danger. Three days ago, we learned that our ignorance is not invincible. The unknown came calling on us. This may be our last chance to deal with this planet on our own terms."

As they finished their reports that night, an unfamiliar voice broke in on the radio channel.

"Stand by for visual. Stand by for visual."

Kent looked inquisitively at Krenitsky, who shrugged and unfolded the

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holoscreen. Power drain and interference had made radio the preferred method of communication.

Multi-colored static flashed, leaving a globular cluster after-image. The head of Mary Bainbridge-Keating wavered, then abruptly defined itself, appeared almost solid. Her troubled eyes sought those of her husband.

"Kent, it—he—it has been talking to me. I've told it that it can't be part of our family, but it insists—" Hysteria tinged her rising tones. She clamped her jaw shut and took a deep breath.

"The scientists want you to listen, at least. They think we may be able to learn something."

Her image was replaced by the face of the last person Park expected to see. He felt a catch in his throat as regarded the golden, beaming countenance of Hamilton Bainbridge-Keating.

"Greetings, Father." The words were clear but hesitant, as if the product of a just-learned lesson. There was also a trace of strangeness in the pronunciation. Park could not decide if it were accent or speech impediment.

"I am sorry I caused you distress at our first seeing. I was not fully formed then. Since then I have learned much. I have smoothed my skin—"

(That was the most shocking thing, Park realized. Skin color and texture were flawless. The hair was now unruly but human hair. The facial expressions were those of a precocious five year old.)

"—and begun learning those things most useful to a good son. Come back, so that I may please you, and we may learn together."

Park felt a chill run down his spine.

"Where is my son?" Kent asked, in a voice so full of emotion that Park did not dare look at him.

The face clouded. The emotion was perfect even to the trembling underlip.

"I am your son. I—"

"Where is my real son, Hamilton?"

"Hamilton has been chosen by the—" the face twisted with misery. "You do not have a word for those who formed me. He has been greatly honored by the exchange. We have waited long for his coming. He will be treated with every respect."

"How do I get him back?"

"You are not without him. I am your now-son. Ha-mil-ton will learn and grow and teach. Then he will come and go as he pleases in the living lands. He will free you as well. The living lands will be one again and you will be part of them."

"Get off the screen," Kent commanded.

A frowning, older face appeared. "Freeholder, please be less abrupt. You may not understand what we have here—"

"I understand it's not my son."

"It may be more important."

"Not to me." Kent stood up and strode away.

"Dr. Hall-Wallen," Leatherwood said. "The changeling has altered remarkably. I imagine he is now almost indistinguishable from his model."

"That is so. It is a cause of much comment . . . and concern."

Leatherwood nodded. "I can imagine. There may be one important distinction. Does the changeling have some sort of greenish growth on its neck, near the base of the skull."

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"It does," Hall-Wallen replied. "The structure shows intermittent activity, marked by increased temperature, and a lassitude and distraction of the changeling. Is this significant?"

"I wish I knew," Leatherwood said soberly.

Park knew something was wrong as soon as he woke up. The light was dim, the air still. For an instant, he thought he had slept through the entire day until dusk. Then he saw Kent and Krenitsky crouched around the communications pack.

"I can't stop now," Kent was saying, his voice shaking with frustration. "We are catching up with them. If we drop behind a day now we may lose them completely."

"You have no choice," a sharp soprano voice said over the radio. "This system looks huge as far up as the *Utnapishtim*."

Park imagined what it must be like in the hulk of one of the original starships which had brought fleeing humanity to this planet, now almost entirely shut down, manned only by a skeleton crew which made weather observations, relayed communication traffic, and dreamed of one day sailing the stars again. From the height, the entire planet appeared to be ocean and pin-wheeling cloud masses. Or so the pictures indicated.

"Listen," the voice said in a more conciliatory tone, "if there were a clearing within two hours of you, I'd risk the vetols and lift all of you out. That just isn't possible. You'll have to protect yourselves the best you can and wait it out."

"The jungle itself should protect us this deep," Kent argued. "As I remember, windspeeds are slower down here than they are above the Mists."

"That is true," Leatherwood said heavily. "However, the greater air density more than compensates for the decrease in speed. We can expect a storm to be at least as destructive here as in the highlands."

His eyes shifted briefly to Davis. "I strongly advise you to seek shelter as soon as possible," he said, lowering his voice. "Otherwise, this entire expedition may face disaster."

Kent bit his lip. For an instant, his face was lined and confused. "All right," he muttered.

The search took most of an hour. They settled on a series of pits sunk in the slope of a small hill. A quick examination disclosed them to be dry and uninhabited. Park helped clear debris while another crew, under Davidson, dug hurried drainage ditches along the sides.

It was now almost completely dark. The dogs began to howl, and were cuffed into reluctant silence. A nearly continuous roaring echoed off the mountainside, the crashing footsteps of an approaching giant.

Lightning silhouetted the jungle canopy, fusing it into the veinous system of a single organism.

Kent had been walking the pits, inspecting their progress. "Time to get in," he announced. He sounded as calm as if he were directing a shearing operation back on his Freehold. "We can finish the work from the inside."

The dogs cowered away from the pits, and whined as they were handed down.

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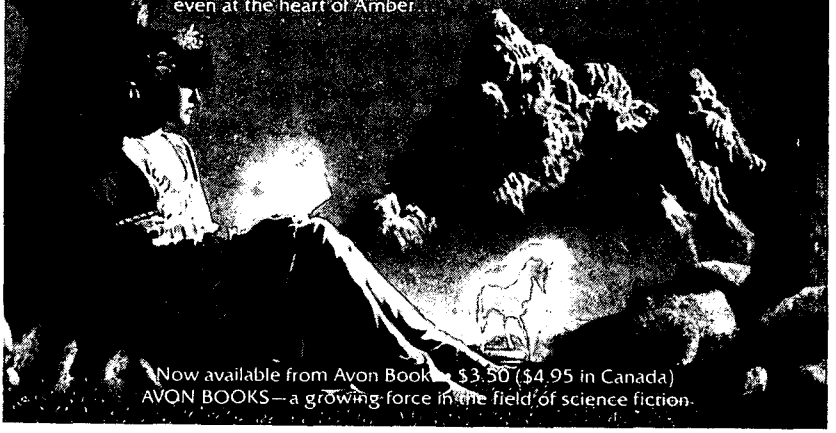

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Tents had been zippered together to serve as covering. Park stood on his pack to hammer in tent stakes along the outer edge. Davidson pulled his part taut. Except for the lightning which strobed through the open folds, the only light came from electric lanterns.

A steadier, higher-pitched rumbling overlay the thunder. Huge raindrops splashed suddenly along the ground and rattled loudly onto the tent fabric. Park cinched the lines tightly through the stakes.

The fabric heaved and bulged more erratically than wind and rain could account for. A head which was almost entirely two large eyes poked itself between two stakes and regarded Park. Half a dozen others erupted through a different gap and swarmed down his back.

Park fell backwards in surprise. He heard a curse behind him, and the sound of metal on cloth.

"Put that damn thing down," Davidson ordered. "You fire in here and you could kill us all. Or destroy our supplies, which would be just as bad."

"Those . . . creatures!" Fowles-Grimeby squeaked.

"Prob'ly just comin' in for shelter same as us. They don't look dangerous." All the same, his voice was doubtful. "Are they, Doctor?"

"I have no idea," Leatherwood said, his eyes wide with wonder. "We never encountered anything like them."

Twisting into s sitting position, Park became aware of several warm forms pressing against his side, shivering. Thin beaks curved out from between the large, dark eyes. Soft, downy scethers—the scale-like skin covering which on some animals had evolved into an analog of feathers—clothed the bodies.

"Enough gawking!" Davidson had to yell to be heard above the cacophony of the storm. "Move the gear to high ground."

Despite the ditches and the covering, sheets of water were streaming over the side of the pit. Park grabbed two packs and leaned them precariously against the higher ground along the side.

As if this were done solely for their convenience, the creatures scampered down to the quickly filling pool and dipped in the tips of their beaks, for all the world like society matrons at a tea tasting. One of the dogs snuffled suspiciously at the creatures nearest it. The creature turned and touched the dog's nose with a long, hair-thin projection from its—forepaw? hand?—and drew it back, inserting it in the small hole at the end of its beak. It stared at the dog meditatively, as if trying to taste its essence.

A sudden gust of wind ripped up part of the tent covering. For several minutes, Park and the others struggled to keep from losing it entirely. Lightning flashed with dazzling brilliance. Thunder followed without pause, shaking the ground all around them. A tree limb crashed directly on top of the pit. The tent fabric bulged ominously beneath its weight.

It ended without warning. Park shook his head, wondering if the storm had stopped, or if he had simply gone deaf. Pulling a stake loose from the muck, he peered outside. Hundreds of beams of afternoon sunlight slanted almost horizontally through the trees. Park blinked

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with amazement, so sure had he been that the storm had lasted into the night.

Water cascaded from leaf to leaf in intermittent, living waterfalls. Frisbee seeds whirled slowly down into the shadows.

"Well, we're in luck today!" Davidson announced.

Park looked up from his morning tea with a skeptical grunt. "Right. We are all exhausted and filthy from yesterday's storm. The quadrupeds are a full day ahead of us, which probably doesn't matter since the rain has washed away all traces of their scent. Or are you suggesting that we're lucky because the whole thing is now so hopeless that we have to turn around and go back?"

Davidson shook his head ruefully. "You sound as down-mouthed as that Fowles-Grimeby lot. I thought you were a boy with grit.

"What I mean is that one of our pilots have spotted the quadrupeds two, three hours ahead of us. They must have been held up by the storm just like us. Our instruments have also spotted an acre-wide mound covered by jungle which looks to be their destination. Only for reasons known best to themselves, they're taking the long way around to get there. So finish that food and start hoofing it. A little speed and we should be able to end this before noon."

Park wolfed down his nutra-bar and shouldered his pack. A new excitement sent his adrenalin surging. Maybe Davidson was right. Just maybe the next few hours would see the boy safe.

They moved quickly through the undergrowth. Several times they had to ford newly-created, ice cold torrents. In one of these, something vaguely spherical leapt from the froth, wrapped rubbery appendages around his chest, and immediately pushed off back into the water, as if as repelled by him as he had been by it. Davidson and the men nearest him found this good for a laugh.

Radio chatter indicated that they were closing the gap. For that reason, Park was all the more surprised to find them stopped, after two hours of marching, at the edge of the clearing. Leatherwood, who had traveled at the head of the column with Bainbridge-Keating since the incident with the Guts, was arguing intensely with the Freeholder.

"Why not?" Kent asked urgently. "If we double-time straight across, we can get in front of them. If we follow their trail, they will get to the mound ahead of us. Forget about their reinforcements. These men will not follow me underground."

Leatherwood's eyes were troubled. "If it were that easy, the quadrupeds would have gone straight ahead themselves. They must have a reason."

"What reason? Guts? Hidden predators? Carnivorous vegetation?"

Leatherwood prodded the tangled brown mat of vegetation with his rifle. A strand snapped shut around the muzzle. He lifted it up for closer examination.

"Tanglegrass. It grows in rocky, nutrient-poor soil. Kinetic energy, say, a footstep, triggers biochemical reactions contracting the loops. These translucent bristles are tipped with nerve toxins. They have no effect on humans. Small animals can be trapped. A grown human should at most be inconvenienced, un-

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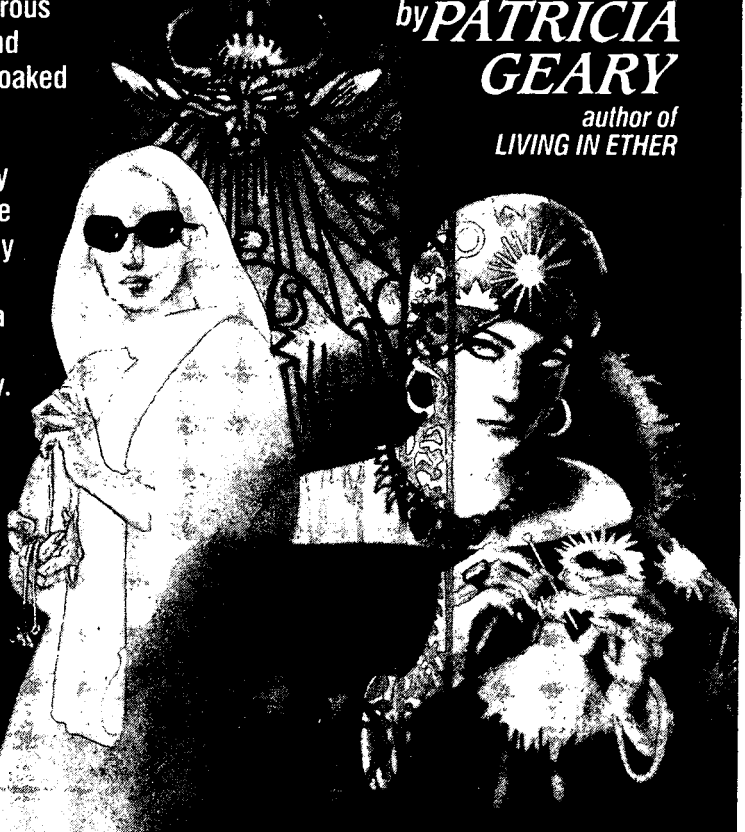

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less he thrashed around so as to break a leg."

"That we can handle," Kent decided. He turned to the other men. "Move out! Use your machetes to cut yourselves free, but make sure you don't take your own feet off. Also, make sure the dogs don't hurt themselves."

"Call a vetol down," Leatherwood urged. "It will take you across that much more quickly, and the men will be more rested when they face the quadrupeds and their masters."

Kent was clearly tempted. "I don't dare lose visual contact this close to that mound. I need the vetols spelling each other in the air."

The column moved into the clearing. Kent stopped, tugging at a leg. Steel flashed in the sun, and he moved on.

Park looked questioningly at Leatherwood as he came even with him. The cleric pointed at an area ten or so meters into the clearing. Squinting, Park saw hard, smooth whiteness disguised in masses of brown tendrils.

"Those bones are too big," Leatherwood fretted. "They should have been able to pull free of tanglegrass. Something else killed them."

Park shrugged and moved out from under the trees.

Phut!

He looked around curiously for the source of the sound. Ahead of him, Davidson seemed to stumble. Park hurried ahead to help him.

Phut! Phut!

There was a groan, so rough and agonized that it seemed hardly possible that it had come from a human throat. Davis Bainbridge-Keating was staggering back, the whole side of his face open in a crimson gash, an ear flapping half-severed.

The impact against his back forced Park to his knees. Scethers beat furiously against the back of his neck as the bloodbird strove to dislodge its beak from his pack. Park's left hand grabbed it and threw it to the ground. He slammed his rifle butt down repeatedly as the creature tried to flutter up from the rocks.

"Bloodbirds!" Park yelled. "Lasers on autotarg. Sweep the sky and get back to the trees."

He thumbed the arming button. The power pack whined into supersonic inaudibility as the arming lights flickered from green to red. Now the sky would be filled with invisible pulses. As soon as a return registered from a moving target, a full-power beam would burn its way back up the track.

Waving the rifle above his head, Park jumped forward. He grabbed Davidson by an arm, stamping the bloodbird with his boot, and levered the man roughly up. He ran for the trees.

There were small explosions in the sky. A pink mist drifted down onto the tanglegrass. Park threw himself into the trees and collapsed, gasping.

Tsui-Halperin lay his laser alongside the two additional bloodbirds which had embedded themselves in Davidson and dispatched them.

"I was trying to rescue him," Park said, his voice cracking. "I didn't mean to use him as a shield!"

The doctor examined the original neck wound. "I'm afraid that's all he was good for, son."

Most of those not wounded were firing from the edge of the trees. "Stop

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that!'' Krenitsky commanded. ''You'll shoot down our only way out of here.''

The roar quickly increased from the barely perceptible to a force which seemed to squeeze the air from Park's lungs. The vetol slid out of the sky, dully burnished in the hazy sunlight. It landed as close to the trees as its pilot dared.

Park slung his rifle over his shoulder, and awkwardly picked Davidson up in a fireman's carry.

''You can't do anything for him,'' Kent said. ''Don't slow yourself down.''

Park shook his head. ''I may have got him killed,'' he muttered. ''I can at least get his body back to his kin.''

They broke from the trees at Kent's command. With every step of the fifteen meters, Park expected to feel a bloodbird's beak slam into his back.

He staggered into the cargo bay. The door lifted and sealed behind him. Kent checked to make certain that they were missing no one. He went forward to the cockpit ladder. The jets began their thunderous crescendo. Davis, his face half-hidden in a medipak, reached out as his father passed by. Park could read his lips: *Save my brother*. Kent nodded, touched his son's cheek, and made his way up the ladder.

He was back in less than two minutes. He waved Park, Leatherwood, Fowles-Grimeby, Regis-Horley, and Krenitsky into a circle so that he could make himself heard.

''There are seven of us wounded,'' he shouted, ''but Tsui-Halperin has to stay with the casualties until they can be flown to the Maremount Hospital. I—''

He faltered. ''I need the rest of you. The pilot will drop us at the far edge of this tanglegrass plain. We should be just ahead of the creatures that have Hamilton. This vetol will lift immediately, but there should be another one in just over half an hour. By then, everything will be over.''

His eyes pleaded with them. Park was embarrassed. *Oh, Uncle, it's all over now. Only six of us! We've lost.*

But what he said was ''Sure, we'll help you.''

They jumped down the ramp and ran for the trees. This close to the jungle, the tanglegrass was dry and weak. Park snapped loose two strands which caught about his ankles. Behind him, the jet engines screeched to full power as the vetol lifted into low-hanging clouds.

Park crouched beneath the safety of a tree, catching his breath. Kent oriented himself on the sun, then waved them ahead into the jungle.

They cut their way in for thirty meters. Save for the straight line they had slashed, Park would have lost all sense of direction. He had just concluded that they were hopelessly lost, when they came out on what was obviously a narrow trail. There was bare, packed-down ground less than a meter across, extending left and right until it curved out of sight. Long, white, cylindrical fruits hung on either side of the trail.

A quadruped came into sight. It lumbered toward them unconcernedly. Then a second, and a third. Across the back of this one lay the limp form of Hamilton Bainbridge-Keating. Behind it walked the milk-white biped with the starburst mane.

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Kent leveled his rifle and walked forward.

"No shooting unless absolutely necessary," Leatherwood said. Kent nodded. Park kept pace just behind and to the side. After all this way, they would just reach out and pick the boy up.

The biped saw them and stopped, motionless. Then it reached up and ripped loose a white fruit. It fell at the creature's feet and shattered. Almost microscopically small petals spilled up into the air, blotting everything from sight.

Park marked where Hamilton had been and charged into the fog. Twin whirlpools formed on either side of his mouth as he inhaled. It felt like a light, wet cloth inside his chest. His heart began to pound. He gasped again, getting even less satisfaction this time. His chest heaved convulsively, air rasped through his throat, yet the need became even more compelling.

The biped appeared through the fog. Suddenly certain of his own death, Park raised his rifle. The biped reached a long finger into its mane, and flicked it forward.

The last thing Park felt was the burning of his neck.

The hum of a million voices, each one separate and distinct, some simple, self-absorbed monotones, others multi-voiced with bewildering fugato complexity, every impression individual, yet somehow blending together as if obeying a strong, unseen baton.

—High atop a rising column of warm air, holding motionless by the simplest muscle movements which change the angle of outspread wings cutting into the wind. This is in the far background of consciousness. In the foreground, with sensual, almost painful immediacy, colors brighter and sharper than human eyes had ever seen. Far, far below, specks curved through the air in figure eights.

Lightning Claw (It is Leatherwood making the identification, his thought more thoroughly changed with his personality than a voice could possibly be) *It feeds on bloodbirds and other flyers*

Powerful, clawed forearms thrusting into, through, the dark, moist soil. Pause, for a deeply drawn breath. There, amid the roots which vein the soil, and the small, myriad-legged tubular creatures which churn through, enriching it, there, there, the sweet, nearly overpowering odor/taste which means a Gut above. Lifting its snout, it swings upward to its meal.

Whirling and twisting from branch to branch, all three eyes maintaining a constant watch in all directions, it revels in free-fall flight, the shock as pincers bite hold of a branch, the exultant tension and release of muscles as it hurls itself through the shadowed canopy.

—A memory of a memory: a time when there was no time but the eternal, golden Now. A rhythm of ingestion and excretion, growth and dying, as natural as breathing.

Yet in this timelessness, ways of oneness are learned which structure the Now. Bushes which arc over and root themselves in the ground are learned to be natural shelters, all but waterproof. Some seeds are good eating, and flower when excreted. Soon they cannot flower any other way.

The Way branches in its fullness.

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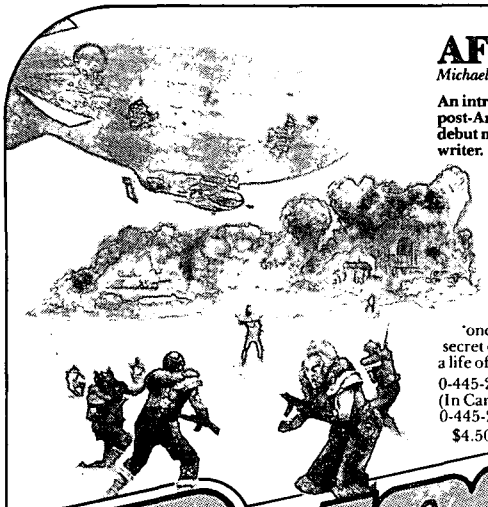

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Relationships of plants with soil, of animals with plants, are recognized and, tentatively at first, aided.

#Catalysts# (The thought is that of Fowles-Grimeby, but with a hard-edged clarity that Park finds a complete surprise.) *#These creatures are zoological catalysts#*

("Catalyst" echoes through the network. The concept shocks/astounds/delights. It is perceived/digested and, with uncountable subtly-nuanced changes, accepted.)

+In the fullness of time, Life gave to us Othereyes+

(There are no words, only quickly shifting, patterned impressions: remembered emotions, sounds, images, other senses too alien for Park to comprehend, much less remember. A story weaves itself from their structure. Because Park's culture has for millenia been that of the Word, he translates most of what he comprehends into words. Because his species is predominantly visual, one picture hovers over everything: a dark, greenish fungus, found originally on decaying trees: Othereyes.)

At its first, accidental touch—

Smell/taste multiplies itself endlessly through the sensory apparatuses of creatures ranging from those barely visible to the land leviathans of the swamps. Light cascades through every imaginable type of organ: composite eyes, light-sensative spots, some stereoscopically focused, others which see into the far infra-red and ultraviolet ends of the spectrum. Sound: the Brownian motion of air molecules rubbing against an ear drum; storm gales screaming across mountain peaks.

—A defensive mechanism of the fungus—a way of confusing and disorienting any animal which would feed on it—(This thought is a human-inhuman blend, and the Growers—those who have been orchestrating this group dream—draw back in disorder, as startled by Darwinian teleology as they are familiar with every living thing on the planet.)

Times passes, a blur measurable only by the shifting patterns of the stars. Under the increasingly confident touch of the Growers, the jungle flourishes, becomes planet-wide, a living cathedral—(Again, a confused withdrawal, as an unexamined pantheism brushes against the geometric complexities of Nicene theology. But urgency presses: there is so much which must be conveyed, and time is almost gone!)

Only the High Cold Places resist their efforts, yielding grudgingly to the advance of life. One day, a silver teardrop falls slowly from the sky above the highes of Places. The mountaintop explodes with fire. (Memories of erupting volcanoes; even, from the dim past, of meteor strikes. But no, this is different.)

Other High Cold Places are sown with fire. As they cool, gleaming metal creatures chew the soil and vomit poison along the edges of the scalded land. The Growers watch with puzzled concern.

Then, something totally unexpected! Beyond the spew of poison, life springs up—strange in form and variety, but stronger, denser, much more successful than anything the Growers have been able to encourage on these cold fastnesses. In time, there are unfamiliar animals and with them, bipeds with shifting skins. A conclusion grows, fragile and inevitable as a new blossom: these bizarre creatures are Growers themselves.

They must know these other Growers. Birth among the Growers begins with

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an exchange of seed. This growing will begin with a similar exchange. They will make their gift as similar to one of the new Growers as possible, and they will study and nurture and learn from it—

MMYY SSONN! (Overlapping images of a wounded lion/land leviathan. Hurt and anger and longing burn as they braid together.).

^It's okay, Dad^ (A cool, almost minty thought, flavored with delight and curiosity, troubled only along the edges.) ^I'm not afraid anymore. The Growers are really nice, I think. They want to help—^

GET RID OF THAT STUFF CONTROLLING YOU. COME HOME WITH ME.

Pain lances across the side of neck and jaw so intense that—

Park sat up, blinking. He put his hand to his face, expecting to have it come away, sticky with blood. Dry green powder coated the palm.

He tried to stand. Coughing racked him. A milky fluid dribbled from his lips. At least he could breathe. Gripping his rifle barrel, he pushed himself to his feet.

Bainbridge-Keating stood four meters away. Blood welled from deep gashes along his neck. His right hand was covered in red. Around him lay the other members of the party, like sleepers in a child's fairy tale.

"You're up. Good." The Freeholder's voice was rough with pain. "They've exhausted the last of their tricks. They can't stand up to lasers. You and I can get Hamilton."

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Park licked his lips, trying to sort out fragments of the dream. "I don't know," he said. "This isn't what we thought. Maybe we have a chance here, a chance—"

Kent shook his head. "That's the fungus, making you hallucinate. Scrape it off. Concentrate on Hamilton, your godbrother."

"This may be more important to all of us," Park insisted. "We've never understood this planet. Now, maybe, we can come to terms, make it a real home."

"You've been listening to Leatherwood too much."

Park brought up his laser, pressing the arming switch. "Uncle, I don't think either you or Hamilton will survive if you go into the Mound shooting. Please stop."

Kent's look was full of compassion. "You're a good boy, Park. I've known that for a long time. That's why I asked you to be Hamilton's godbrother. Your laser has powered up so quickly because you have it set on lowest power, because even though you are under the influence of the fungus, you are still bluffing. The last thing you want to do is hurt me.

"So I'm going forward. If you can regain enough control of yourself, come with me. If not, I understand. I won't hold it against you."

"Please . . ." Park begged. He let the rifle barrel fall. With it pointing at Kent's knees, he fired.

Many times, in the years that followed, that scene was reenacted, whether on videoscreen or on stage. For although humans did many things in the fullness of Convergence which would have been totally incomprehensible to their Terrestrial ancestors, they still sang and prayed, and wrote and attended plays.

But it was long before any of this could ease the bitterness of the father whose son had been lost to a fate more strange and glorious than he was willing to imagine. ■

CLARION WEST ANNOUNCES 1987 WRITERS' WORKSHOP

The fourth annual Clarion West science fiction and fantasy writing workshop will be held at Seattle Central Community College June 21-August 1, 1987, with writers-in-residence: **Edward Bryant, Octavia E. Butler, Ursula K. Le Guin, Connie Willis, Shawna McCarthy,** and **Samuel R. Delany.**

Approximately 20 students will be selected from the applicants. Tuition until March 15, 1987 is $925; late applications will be considered until May 15, 1987 at a cost of $975 (college credit and lodging costs extra); limited scholarships are available. Submit 20-30 pages of manuscript (1-2 short stories or a novel portion with outline), together with a $50 refundable deposit payable to Clarion West, and a cover letter containing background and reasons for wanting to attend Clarion West. Send to: Clarion West, P.O. Box 12064, Seattle, WA 98102. For further information, call Seattle Central Community College (T-F 8:30-4:30) at (206) 587-5473.

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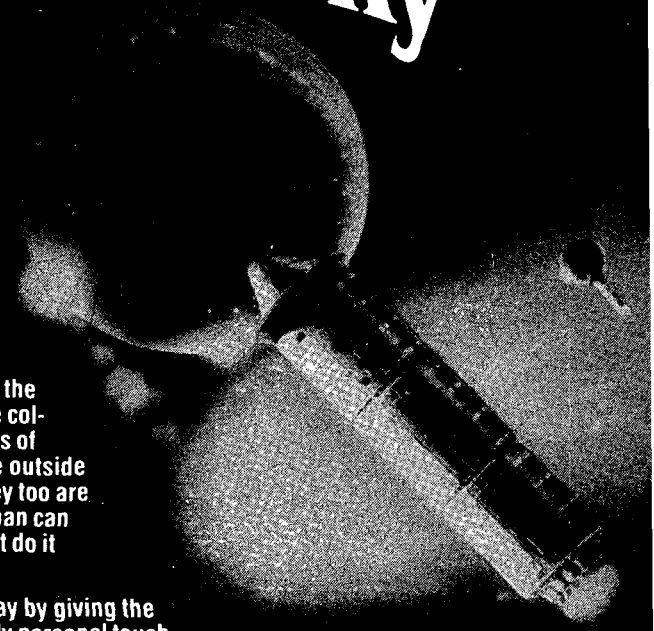
PRESENTS

The Man Who Pulled Down the Sky

By JOHN BARNES



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Jay Kay Klein's biolog

Robert Reynolds Chase tries to impose rationality into a world where materials, men, and methodology crunch together. As a civilian attorney employed by the U.S. Army to advise on contracts, he is one of the first persons to run into the $500 toilet seat and $100 hammer.

Bob was born and raised in Attleboro, MA , and he became a sort of third-generation success story at the prestigious Phillips Exeter Academy after his grandfather had worked there from time to time as a painter, followed by a father who did caddying for someone who put up enough tuition money for a senior year. He attended Phillips for two years, then Dartmouth College and Duke University law school.

At Dartmouth he majored in the sort of cross-disciplinaries major that involves dealing with a wide range of human problems. He found that international relations along with anthropology, economics, government and so forth really set the stage for negotiating conflicts ultimately involving human beings.

Bob decided upon law, where at least there are established, systemized approaches to problem solving.

In law school he learned what the rest of us have gleaned from Professor Kingsfield over the TV tube, that words must be used with precision like surgical instruments. A given phrase cannot be approximately correct, it must be exactly right or it is wrong. Society needs individuals with a sense of morality and personal responsibility. Any one-sided attack on a problem can only result in such fiascoes as the one found in the conclusion of Bob's first story in *Analog*, Mid-Dec. 1984, that the balance wheel of reality lay in accounting.

As a long-time science fiction reader, he also has the universal desire such persons have for learning about science and technology. Bob often finds that the engineers he discusses performance standards with aren't familiar with the legal niceties required in a contract or the total engineering problems involved. And even in the simplest cases, writing up a performance standard for, say, a hammer, and getting bids on a few dozen hammers would cost more than simply paying $100 each outright.

In a made-up world, Bob can set things up his own way, although even here a malfunctioning word processor can impose an external influence. Creative writing is more fun than lawyering where people and rules restrain what you'd like to do. Getting widely known and having some extra money doesn't hurt, either! He thinks that science fiction helps people get the kind of mental flexibility they need in a universe larger and stranger than normally imagined, a place where a $500 toilet seat can thrust itself under you without warning. ■

Robert R. Chase

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Ben Bova

MOONBASE ORIENTATION MANUAL II: RESEARCH AND RECREATION

EDITOR'S NOTE

The year is 2036. You are on your way to the Moon to begin a job at Moonbase, one of two flourishing and growing settlements on that new world, located in the northwest quadrant of the crater Alphonsus. On the way you read this book, provided by your new employer to prepare all its new employees for their new way of life.

In 1987, these pages are adapted from *Welcome to Moonbase! A Moonbase Orientation Manual,* to be published in Fall 1987 by Ballantine Books, which will deal with an even wider range of problems and opportunities of lunar life. From a 1987 point of view, the *Manual* describes how things *can* be in fifty years—if enough people start making them so now.

Meanwhile, if it should happen that something in the future described here suggests a story you'd like to try writing, Ben Bova has kindly given his permission and encouragement for you to use his background. And Stanley Schmidt would be delighted to consider such stories for *Analog.*

EXPLORATION AND RESEARCH

Men first came to the Moon in search of knowledge. Since those very earliest days, since before there was a Moonbase, the quest for knowledge has been a driving force in the human exploration and settlement of the Moon.

Today, Moonbase's Exploration and Research Program Office directs scientific studies across a broad range of astronomical, selenological, physical, social, and medical sciences. Scientists make use of the Moon's low gravity, high vacuum, seismic stability, wide

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temperature range, and—on the far side—low radio noise, to conduct experiments and make observations that are impossible anywhere except on the Moon.

Moonbase cooperates fully with Lunagrad in virtually all of these investigations. There is a vigorous ongoing exchange program in which scientists from Lunagrad work at Moonbase for weeks or months at a time, while Moonbase scientists do the same at Lunagrad. Moonbase and Lunagrad share the costs of operating Star City, at the Mare Moscoviense. The far side facility is staffed equally by men and women from both lunar communities.

Origin of the solar system

Until the Age of Space began, questions about the origin of the solar system could be approached only by passive observations of the Sun, planets and minor bodies, and geological investigations of Earth and meteorites that were found on Earth. Today, scientists are examining the structure of the Moon, Mars and certain comets and asteroids first-hand, as well as studying the Sun and other planets and moons from space and lunar observatories.

To this day, scientists are uncertain as to how the Moon formed and how the solar system began. Before the first lunar landings it was hoped that the Moon's surface rocks, never eroded by wind or rain, would reveal information dating back to the very beginnings of the solar system. However, it was quickly determined that the Moon does suffer a weathering effect from the constant infall of meteoric dust. And, as a glance at the battered face of the Moon easily shows, the surface was subjected to a tremendous meteoritic bombardment in the early history of the solar system.

Lunar geologists (selenologists) have determined that the Moon was formed between 4.5 and five billion years ago. The heavy meteoritic bombardment ended some three billion year ago, although meteorites of smaller sizes, ranging down to dust grains, constantly bombard the lunar surface. The oldest rocks found on the Moon are about 4.7 billion years old; the youngest, about 3.1 billion.

Geological teams are methodically studying every square centimeter of the lunar surface. Their goal is to produce a surface map that reveals not only the geographic features, but the types of geological formations and their chemical content. This information is important for understanding the origins and history of the Moon. It is also invaluable in locating and identifying new sites of valuable natural resources. Much of this work is done by automated surface crawlers. Teams of human geologists are sent only to specially-interesting sites that their robotic aides have found.

Seismologists are investigating the inner structure of the Moon. Working in cooperation with colleagues from Lunagrad, Moonbase's seismologists have established a network of seismological stations that stretch from the walled plain Plato (51°N, 9°W) to the

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giant crater Clavius (56°S, 14°W) and eastward to Mare Crisium (60°E). These stations, which operate under remote control from Moonbase and Lunagrad, include both passive seismic detectors that measure natural moonquakes, and active explosive charges that allow the scientists to study how a measured amount of energy affects the lunar crust and interior.

Seismic stations have also been established on the far side, from the Cordillera Mountains on the rim of Mare Orientale (20°S, 110°W) to Star City itself in Mare Moscoviense (27°N, 147°E). Because of objections from Star City's astronomers to man-made vibrations that might affect their equipment, only passive seismic observations are made on the far side.

Measurements of heat flow from the lunar interior are also made at the seismic stations. They have shown conclusively that the Moon does have a small molten core, presumably of iron.

Lunar geologists are also studying the mascons that underlie several of the larger maria. These massive concentrations of dense material are believed to be the remains of huge meteorites that blasted out the maria early in the Moon's history, more than three billion years ago. The mascons lie, on the average, between 50 and 80 kilometers below the surface. They measure some five kilometers thick and between 100 and 200 kilometers in diameter.

The fact that the mascons have not sunk to the center of the Moon indicates that the lunar rocks were solid, not molten, when they hit and blasted out the maria. The mascons undoubtedly contain megatonnages of heavy metals, but because they are buried so deeply, it is easier (at present) for Moonbase to mine heavy metals from asteroids than to engage in *very* deep pit mining.

The regolith contains some rocks and fines that are slightly magnetic, although the Moon as a whole has a negligible magnetic field. Radioactive elements in KREEP-type* and other rocks are found only in certain locations, such as around the Mare Imbrium basin. Does this mean that these elements are not "native" to the Moon, but were carried here by meteoroids? Since the Moon is deficient in elements heavier than iron, this seems a likely explanation.

Geologists also help in the study of the Sun's history! For billions of years the solar wind and cosmic radiation have bathed the lunar surface with subatomic particles. Geological teams drill deeply into the Moon's crust and take core samples that contain minute amounts of these particles, trapped in the lunar regolith and crust. The number of particles trapped at different levels, and the relative abundances of the various kinds of particles, give important data on the Sun's behavior in the past.

Thus by investigating the structure of the Moon, scientists are learning more about the early history of the Moon and the Sun, and probing the origins of the entire solar system, as well.

*KREEP is an acronym for Potassium (chemical symbol K), Rare Earth Elements, and Phosphorus.

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Astronomy from the Moon

The Moon has become the astronomer's Mecca. The finest equipment and the best astronomers do their most exacting work at Moonbase, Lunagrad, and especially at Star City (Zvezdagrad) on the lunar far side.

This is because the Moon offers many advantages over Earth-based and orbiting astronomical facilities.

The lunar surface provides a solid and stable platform for precise astronomical observations. The slight seismic disturbances of moonquakes are actually less of a problem than the vibrations produced by truck traffic at many Earth-bound observatories. Orbiting observatories are extremely sensitive to vibrations and other motions because they are effectively in zero gravity. Lunar observatories have the advantage of one-sixth gravity: low enough to allow construction of very large mirrors and antennas, high enough to avoid the problems of vibration, motion and pointing accuracy that affect facilities in zero gravity.

The Moon's 27-day rotation rate allows astronomers to keep their instruments fixed on pinpoint targets for hundreds of hours at a time, which cannot be done at orbiting facilities or on Earth's surface.

Most orbiting astronomical facilities are within the Earth's magnetosphere. Those in LEO are below the Van Allen radiation belts. This limits the studies that can be made of the solar wind and interplanetary magnetic field dynamics. The Moon is far beyond the Earth's magnetosphere, except for one period each month when its orbit carries the Moon through the Earth's geomagnetic "tail." At that time, detailed studies of the magnetosphere tail are conducted.

The far side of the Moon is the quietest place in the solar system, as far as radio-frequency noise is concerned, with 3476 kilometers (2160 miles) of lunar rock insulating against the radio clamor from Earth. During the periods of night on the far side, even the natural radio emissions of the Sun are thoroughly blocked out. When the planet Jupiter is not in the far side's nighttime sky, the radio emissions of the distant stars can be studied with practically no interference whatsoever.

Star City, therefore, has become the prime center for SETI: the Search for ExtraTerrestrial Intelligence. Several very faint radio signals that are periodic in nature have been detected by Star City's complex of radio telescopes. These signals are being studied to determine if they actually are deliberate messages from an intelligent civilization. They appear to be emanating from the Sagittarius arm of our Milky Way galaxy, a region that lies some 10,000 light years closer to the center of the galaxy than our solar system.

There are three major radio telescopes at Star City: the Drake telescope, a 90-meter steerable "dish" antenna, the largest in the solar system, and two 50-meter dishes, named Shklovsky and Sagan. The facilities are named in honor of Frank Drake, I.I. Shklovsky, and Carl Sagan, three twentieth-century pioneers in the search for extraterrestrial intelligence.

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The 50-meter Sagan antenna is located not at Star City itself, but in the large crater Apollo (37°S, 153°W), some 2600 kilometers away. It operates under remote control from Star City and is normally attended by automated robotic systems. Working together, two antennas can conduct radio interferometry studies that require a long baseline. The longer the baseline between two telescopes, the smaller the angular distance they can resolve. Star City's radio telescopes were able to pick out from the natural background of radio noise of the stars the periodic microwave emissions from the region of Sagittarius that may be intelligent signals.

For *very* long baseline radio interferometry, Star City's facilities work with radio astronomers on Earth, providing a baseline of approximately 384,405 kilometers. Only experiments in which one of the radio telescopes is aboard a spacecraft beyond the orbit of the Moon have provided longer baselines.

The largest optical telescope in the solar system is Star City's 1,000-centimeter Bok reflector, named after the Dutch-American astronomer, Bart J. Bok. Like the radio telescopes, it was built entirely on the Moon, from lunar materials. The main mirror for the Bok telescope was built at Moonbase, as were most of the optics. The structural frame was built by a joint Lunagrad-Moonbase team on-site at Mare Moscoviense.

The Bok telescope was able to resolve the planets orbiting Barnard's Star and Wolf 359, the first time the planets of other stars were actually observed, rather than deduced from indirect data.

Other astronomical facilities at Star City include a growing array of instruments designed to detect forms of radiation or subatomic particles that cannot be observed from the surface of the Earth. Thanks to the airless vacuum of the Moon, *all* the forms of radiation in space reach the lunar surface. And since the Moon has a negligible magnetic field, solar and cosmic particles can be detected on the surface, as well.

Telescopes sensitive to infrared, ultraviolet, x-ray and gamma ray wavelengths gather data at Star City.

Other instruments seek to detect the elusive neutrino, a subatomic particle that can penetrate a thickness of more than a hundred *light years* of iron without being stopped! Neutrino "telescopes" consist of large vats of chlorine-rich water buried several meters underground. Billions of neutrinos from the Sun and deep-space sources stream through the vats each second. On very rare occasions, a neutrino will strike a chlorine atom in just the right way to transmute it into an atom of radioactive argon. This activates sensors in the tank, which record the event. Neutrino astronomers are correlating the rate of neutrino flux recorded on the Moon with the results from decades of observations on Earth, where neutrino telescopes are located in deep mines, kilometers below ground.

Astronomers are also recording gravity waves produced by the collapse of massive stars, deep in space. The first

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verified detection of gravity waves was made at Moonbase in 2008, even before the formal dedication of the base. It was the first major scientific discovery made on the Moon, and it verified the predictions of Einstein's 1916 general theory of relativity. It is believed that the gravity waves detected on the Moon originate in galaxies far beyond our own Milky Way. Gravity wave observations can be made much more easily on the Moon, where background vibrations from moonquakes are much less of a problem than earthquakes, volcanic eruptions, and man-made disturbances.

In addition to providing an extremely rich treasure of new observational data for astronomers and cosmologists, Moonbase's astronomical teams also furnish important data for more immediate and practical purposes. Observations of comets and asteroids, for example, are used to determine where needed natural resources can be most easily obtained.

An "asteroid patrol" system has been established, in which radar facilities automatically scan the sky to detect asteroids on trajectories that could impact on the Moon or Earth. If an asteroid large enough to cause significant vibrations in the lunar crust is discovered, Star City is alerted to suspend observations requiring ground stability for the period during which its impact would create unacceptable vibrations. The only "down time" resulting from such an impact, to date, was one hour and eleven minutes, when a three-meter-wide metallic asteroid struck Mare Serenitatis at high velocity. With only a small molten core to absorb such impact energy, the Moon's solid crust "rang like a gong," in the words of a lunar geologist.

Such events are vanishingly rare. It was after that event that the asteroid radar patrol was established. No other asteroid large enough to cause damage to a lunar facility or to Earth has yet been detected. If one is, however, Moonbase has the expertise and equipment to make a deep-space rendezvous with the intruder and alter its trajectory to the point where it will not strike the Earth or the Moon.

Sun/Earth/Moon Interactions

The Moon is an ideal "laboratory" for studying the delicate interactions of the Earth/Moon system with the solar wind.

As early as 1896 the Norwegian physicist Olaf K. Birkeland suggested that the Sun might be emitting streams of particles such as electrons and protons that cause the auroras—the Northern and Southern Lights—when they interact with the geomagnetic field and strike the uppermost layers of the Earth's atmosphere. By the early 1960s spacecraft had proved conclusively that there is a solar wind of ionized particles streaming outward from the Sun. It is a *plasma* that consists mainly of electrons and protons.

The solar wind normally passes the Earth/Moon area at a velocity of some 400 kilometers per second (about 250 mps), although when a violent flare erupts on the Sun the wind can reach

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"hurricane strength" velocities five times that speed. By terrestrial standards the solar wind is an excellent vacuum, less than 10^{-12} torr; it contains no more than 10 to 100 particles per cubic centimeter as compared to the 10^{19} particles per cc of normal room-temperature air.

The Earth, encompassed by its magnetosphere, creates a shock wave in the solar wind, somewhat like the bow wave of a boat as it cuts through water. But the shock wave in the solar wind is not made by the solid body of Earth; it is made by the magnetic field of the magnetosphere. The solar wind presses against the magnetosphere, flattening it to some extent on the sunward side and stretching the night side out into an enormous "tail" that goes past the orbit of the Moon.

The solar wind strikes the Moon's surface, since there is no lunar atmosphere or large-scale magnetic field to absorb or deflect it. However, for about one-quarter of its orbit around the Earth, the Moon is within the geomagnetic tail, and is shielded from the flowing solar-wind plasma.

Thus studies of the solar wind and its effects on the geomagnetosphere can be conducted from the Moon's surface. As the ionized particles strike the lunar surface they create an electric field some five to ten meters high. While this electric "sheath" is too weak to be of interest to anyone but plasma physicists, it does present one practical problem—it tends to make dust particles from the lunar soil cling electrostatically to space suits and equipment. In some cases it becomes necessary to "ground" equipment to remove clinging dust grains.

Plasma scientists have "piggy-backed" detectors and particle sampling sensors onto the seismic stations deployed across the lunar surface. Plasma sensors have also been installed in the towers that support the lunar cable car systems, where they have the advantage of being above the electric sheath, for the most part.

Particle Physics

The two most powerful particle accelerators in history allow physicists to probe the fundamental nature of matter and energy on the Moon. One of the accelerators is man-made, the other is natural.

The natural accelerator is located deep in space, perhaps beyond the Milky Way galaxy altogether. The particles it accelerates, which have been somewhat misnamed as *cosmic rays*, are the most energetic bits of matter the physicists have yet studied.

Physicists measure the energy of subatomic particles in terms of *electron volts*. One electron volt is the energy acquired by an electron when it moves through an electric potential of one volt in a vacuum. It is a tiny bit of energy. But cosmic rays have been measured at energies of billions (10^9), even hundreds of billions (10^{11}) of electron volts and higher.

On Earth, cosmic ray particles from deep space strike atoms in the atmosphere, creating showers of secondary and tertiary particles that eventually reach (and even penetrate) the ground. On the Moon, *primary* cosmic particles

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reach the surface and can be measured and studied directly.

These particles from deep space consist mainly of the nuclei of atoms that have been stripped of their orbital electrons, plus a few free electrons. Cosmic particles have relatively more heavy elements than the universe as a whole does, which leads to the conclusion that they are remnants of supernovas. However, the mechanism for accelerating the particles to such enormous energies (their velocities approach the speed of light) is far beyond the energy of a typical supernova. Somewhere in deep space there is a fantastically powerful particle accelerator. Or perhaps more than one.

While man-made particle accelerators have not equaled the enormous energy output of the stars, Moonbase can boast a particle accelerator that briefly speeds subatomic bits of matter to energies higher than all but the most powerful of cosmic rays.

A particle accelerator is basically a vacuum through which subatomic particles are accelerated by powerful magnets to velocities close to the speed of light, plus sensors and measuring equipment to record what happens when the accelerated particles are smashed into a target—usually other accelerated particles moving in the opposite direction.

The Moon offers the best vacuum available to scientists, and Moonbase already has powerful magnets in operation as part of the mass driver that catapults unmanned payloads off the lunar surface. In fact, the mass driver was originally developed out of research aimed at building better particle accelerators; the wheel of serendipity has turned full circle on the Moon.

Since particle-physics experiments actually take place in a few seconds or less, it is not difficult to divert the energy of the mass driver to powering a particle accelerator experiment. Of course, preparing for an experiment run may take hours, days, weeks or more. Special facilities have been built to generate the particles desired for study and to store them until the moment of the experiment. Storage rings of super-con-

RELATIVE ABUNDANCE OF ELEMENTS

Element	In universe	In cosmic rays
Hydrogen	10,000	10,000
Helium	1,500	700
Lithium, boron, beryllium	10^{-5}	15
Carbon, nitrogen oxygen, fluorine	1.5	40
Neon, potassium	0.2	14
Heavier elements	0.1	5

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ducting magnets hold the particles in "racetrack" orbits until they are injected into the accelerator.

The Moonbase accelerator has achieved energies of one hundred trillion electron volts (10^{14}eV, or 100,000 BeV).

Among the other physics experiments being conducted at Moonbase is an attempt to determine the lifetime of the proton. Theoretical considerations have indicated that the proton may not be a stable particle, although its lifetime is longer than the age of the universe. If the proton is unstable, it means that the universe will eventually dissolve.

On Earth, because of background "noise" from natural sources of radioactivity and secondary cosmic rays, the limit of sensitivity of these experiments is 10^{33} years. At Moonbase's underground laboratories the background noise is reduced to the point where proton decay lifetimes of 10^{35} years have been measured. To date, the proton seems quite sturdy and the universe should last for a long, *long* time.

One other experiment that could have enormous consequences for the human race is the ongoing effort to measure *hypercharge*, the fifth fundamental force that is believed by theoreticians to work counter to gravity.

Very precise experiments performed in the low gravity and airlessness of the Moon have indicated that hypercharge exists, although it is by far the weakest of the five fundamental forces of nature—weaker even than gravity itself. Work is now underway to determine the exact strength of hypercharge, and to consider ways in which it might be turned to practical use.

If hypercharge can be harnessed, then an effective "antigravity" machine may be possible. Space flight, as well as many other aspects of human life, will be revolutionized.

Ultrarapture Chemistry

The advantages of an ultraclean environment for chemical research have allowed Moonbase to develop new metal alloys, composite materials, foam ceramics, metal-reinforced glass, and new electronics materials.

Most of these products and processes are protected by patents or held proprietary by Moonbase Inc. They are not to be discussed with the general public or potential competitors. However, the general principles of lunar chemistry are clear to see.

Lunar vacuum allows metals and other materials to degas, clearing them of contaminants down to a very low level. In the cryogenic cold that is so easily available on the Moon, chemical processes can be slowed to the point where the reactions between individual molecules can be studied. New processes and refinements of known processes can be developed.

One area of crucial importance has been Moonbase's development of superior electronics materials and components. For decades, electronic "chips" have been produced by depositing a thin film of semiconductor material on a substrate. The substrate acts as a structural frame on which the electronically-active semiconductor is supported. Moonbase

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has developed *thinner, lighter, yet* stronger substrate materials and new processes for thin-film deposition that have resulted in the new technology of molecular electronics, or *molectronics*, as it has come to be called.

A molectronic pilot manufacturing plant is now being built, under the supervision of the Exploration and Research Program Office, with consultation by the Mining and Manufacturing Program Office. If pilot production of molectronic components meets expectations, the Mining and Manufacturing Program Office will assume operational responsibility for the plant and enlarge it to a full-sized production facility.

Engineering Science

A small but active group within the Research Program Office still devotes its efforts to exploring new ways in which lunar materials can be used for practical purposes.

It was the Engineering Sciences group that developed the techniques for making lunar concrete, foam ceramics, and the plasma torch system for lunar excavation. This group also supervised construction of the Moonbase particle accelerator and its associated equipment.

At present the Engineering Sciences group's major effort is construction of Moonbase's second mass driver facility, in cooperation with the Space Transportation Program Office. Continuing research is underway in cryogenics, electrical power generation and storage, and construction techniques.

* * *

Medical, Life, and Agricultural Sciences

Although Medical, Life, and Agricultural Sciences are separate groups, each with their own agenda of research goals, their work is so interdependent that it is useful to consider them together rather than separately.

All three groups are devoted primarily to support human habitation of Moonbase and its outlying facilities. The closed-loop environmental systems that provide the base's air, water, heat, and food are almost entirely self-sufficient. While imports of hydrogen (or water) and biologically-necessary volatiles such as carbon and nitrogen are still vital for Moonbase's existence, these elements are increasingly imported from asteroids and comets, making Moonbase less dependent on terrestrial sources. Not only does this increase Moonbase's viability as a self-sufficient center for human habitation, it has a beneficial effect on the economy of Moonbase.

Ecologically, Moonbase is in the unique position of *requiring* growth. Paradoxical though it may seem at first, the larger Moonbase becomes, the easier it is to maintain a closed-loop ecology. The planet Earth is an example of a closed-loop ecology: air, water, food, etc. are constantly recycled on a very large scale. Moonbase is still too small to be able to "close the loop" entirely. But as Moonbase continues to grow, its recycling systems will become less dependent on technological equipment and more capable of using "natural" systems such as green plants for recycling

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the air and bacteria for recycling water and wastes.

One area in which the medical and life sciences of Moonbase are preeminent is in the field of geriatrics. For more than two decades, Moonbase has maintained a small but steadily-growing retirement community for men and women who are too frail to survive in Earth's heavy gravity and polluted atmosphere. In the low gravity and clean air of Moonbase, most of these people do not merely survive, they become active members of the community. Several have begun entirely new careers.

Lunar Exploration

Although human beings have been living continuously on the Moon since the beginning of the twenty-first century, explorers are still combing the lunar surface and still making new discoveries.

Most of the explorers are robots, automated or remotely-controlled crawlers making their way across the rugged landscape. Unmanned satellites crisscross the Moon also, their sensors mapping the surface and probing for natural resources.

Human exploration teams have reached both lunar poles and circumnavigated the Moon on its surface. Although none has yet discovered water in any form, the explorers have found valuable sites of resources ranging from precious stones such as diamonds to deposits of gallium, sulfur, methane and ammonia—which, on the Moon, are more valuable than gemstones.

Moonbase University

With such a high percentage of scientists and other professionals among Moonbase's population, it was inevitable that a university would arise.

Moonbase University was founded in 2023. It is mainly a research center, rather than a teaching institution. The staff consists of permanent Moonbase residents, with visiting faculty from the temporary employees. Guest lecturers include leading figures in every academic field, some specifically invited to Moonbase, others giving special lectures from Earth via interactive television. No undergraduate instruction is offered at the University, but graduate degrees can be obtained in fields such as low-gravity physiology, astronomy, selenography, and other areas associated with Moonbase's expertise.

Moonbase University is accredited by more than fifty nations, including each of the fifteen nations that are major share holders in Moonbase Inc. The University enjoys close ties with Lunagrad Technical Institute and maintains electronic links with most of the major universities on Earth.

FOOTPRINTS IN MOONDUST: LUNAR TOURISM

A century ago, the very thought of reaching the Moon was widely regarded as impossible. "Flying to the Moon" was considered the ultimate nonsense of wooly-headed dreamers. Even when the first astronauts landed on the lunar surface, 1969-1972, there was widespread criticism: the Apollo program

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was called a worthless stunt, a "Moondoggle."

As recently as a decade ago, the idea of tourists vacationing on the Moon was considered absolute nonsense. Who would want to travel a quarter-million miles to visit a world of barren desolation? Scoffers claimed that the costs, the dangers, and the lack of comforts would forever keep the Moon off-limits to tourism.

How wrong they were!

But the doubters were not proven wrong merely by good fortune. Moonbase management drew careful plans, more than a decade ago, to assess the possibilities of lunar tourism. Several interlocking factors convinced the planners that lunar tourism could be feasible.

First, living space at Moonbase was being rapidly expanded. Quarters for tourists could be provided that were as comfortable as accommodations at first-rate tourist hotels anywhere on Earth.

Second, services for tourists opened up an entirely new area of employment for Moonbase. In particular, many of these services could employ teenaged or young adult men and women. Not only would this allow Moonbase to begin recruiting younger personnel, thus helping to balance the age demographics of the base, but it could be used to encourage older personnel with teenaged children to come to Moonbase with their families. Many key scientists, technicians, and administrators were attracted to Moonbase for this reason.

Third, transportation costs were being driven down steadily by Moonbase's oxygen production and manufacture of spacecraft structures, components, and electronics systems.

Tourism Program Office

Once the decision was made to "go after" tourists, the Tourism Program Office was established. Its first task was to convince the most influential segments of the terrestrial tourist market that Moonbase was attractive and affordable.

This was done by resorting to one of the fundamental ploys of the tourism industry: well-known personalities, considered "trend setters" in their societies, were invited to Moonbase *gratis*. They included famous figures from the worlds of entertainment, sports, and the media. Within two years Moonbase was established as a "dream vacation site."

Flying Like a Bird

There are two things that a person can do on the Moon that are impossible on Earth. One of them is human-powered flight. In one-sixth gravity, all that is needed to fly is a set of wings and some air. The Tourist Program Office provides the wings, and flying space is available inside the vault that covers the Main Plaza.

Although it appears superficially like hang gliding, lunar flying is true human-powered flight. It does not depend on wind or air currents, but on the muscles of the flier. Using nothing but one's own muscle power, a person can lift off the ground, climb, bank, soar, and even do

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spectacular aerobatics in the gentle lunar gravity.

The wings used for flying are made of monolayer plastic, manufactured in zero-gravity facilities at LEO, and braced with ultra-lightweight struts made of lunar magnesium. Wings can be rented at the Tourism office in the Main Plaza.

The First Footprints Club

The other thing that a vacationer can do on the Moon that cannot be done anywhere on Earth is literally to plant his or her booted feet "where no man has gone before."

Because the topmost layer of the regolith is powdery, with about the consistency of beach sand, you leave footprints wherever you walk—footprints that will last for millions of years if they are not disturbed by others.

The First Footprints Club is a loosely-organized association of those people who have made footprints on the lunar surface. Moonbase has set aside tracts of ground for First Footprints along the floor of Alphonsus and outside the crater's ringwall, on the Mare Nubium.

A visitor (or a Moonbase employee) can leave his or her footprints in one of these tracts and place a small nameplate of lunar metal alongside them. They are then sprayed with instant-setting clear plastic so that they cannot be disturbed. The person registers the exact lunar latitude and longitude of the prints with the First Footprints Club, which maintains such records in its headquarters at Moonbase.

Footprints at historical sites, such as the Apollo 11 landing area at Mare Tranquillitatis, are covered with protective plastic so that visitors cannot damage them.

Shrines and Scenic Wonders

By far the most popular place on the Moon for visitors is the Apollo 11 landing site, Tranquility Base. The base of the Lunar Module remains exactly where Armstrong and Aldrin left it when they lifted off to rendezvous with Michael Collins, orbiting the Moon in the Apollo Command Module. The American flag still stands stiffly in the airless silence. The equipment and sensors that the astronauts used remain exactly where the first men on the Moon left them.

There are other shrines on the Moon, as well.

The Borkovsky landing site of 1999, inside the giant crater Copernicus, offers not only history but a chance to see one of the largest, most prominent, and most beautiful craters on the Moon.

Two of the original temporary shelters from the Heroic Years have been preserved in their original condition for tourists and other visitors. One of them is on one of the walking paths laid out on the floor of the crater Alphonsus. The other is on Mare Nubium, reachable by tour bus or trolley.

The landing site of the Diana 1 mission of 2001 is not only within half a kilometer of the Apollo 12 lander (1969); the earlier unmanned Surveyor 3 spacecraft is also sitting a scant 200 meters from the Apollo landing module.

From this spot on Oceanus Procellarum, towards the end of a long lunar night, you can almost believe that this

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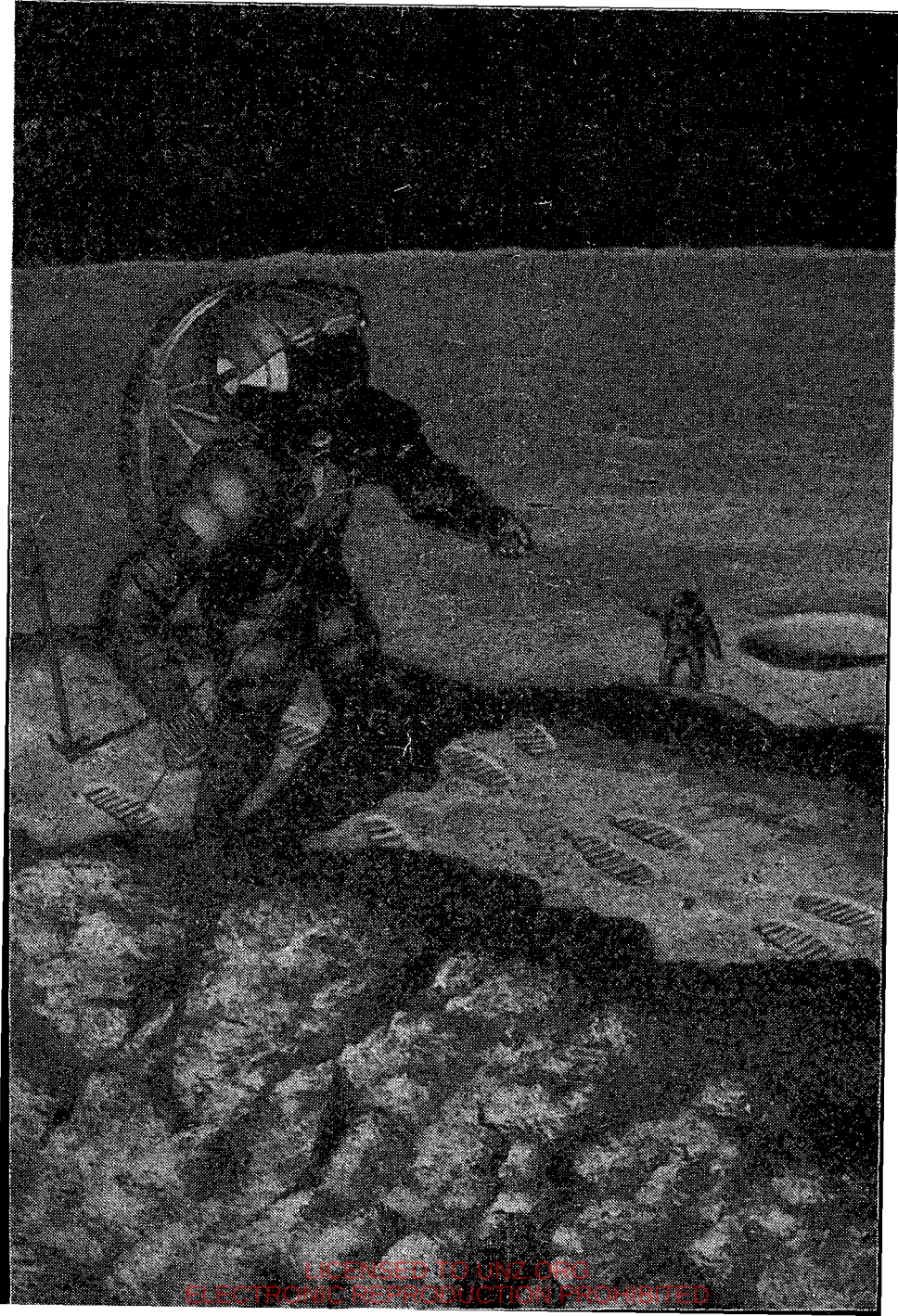

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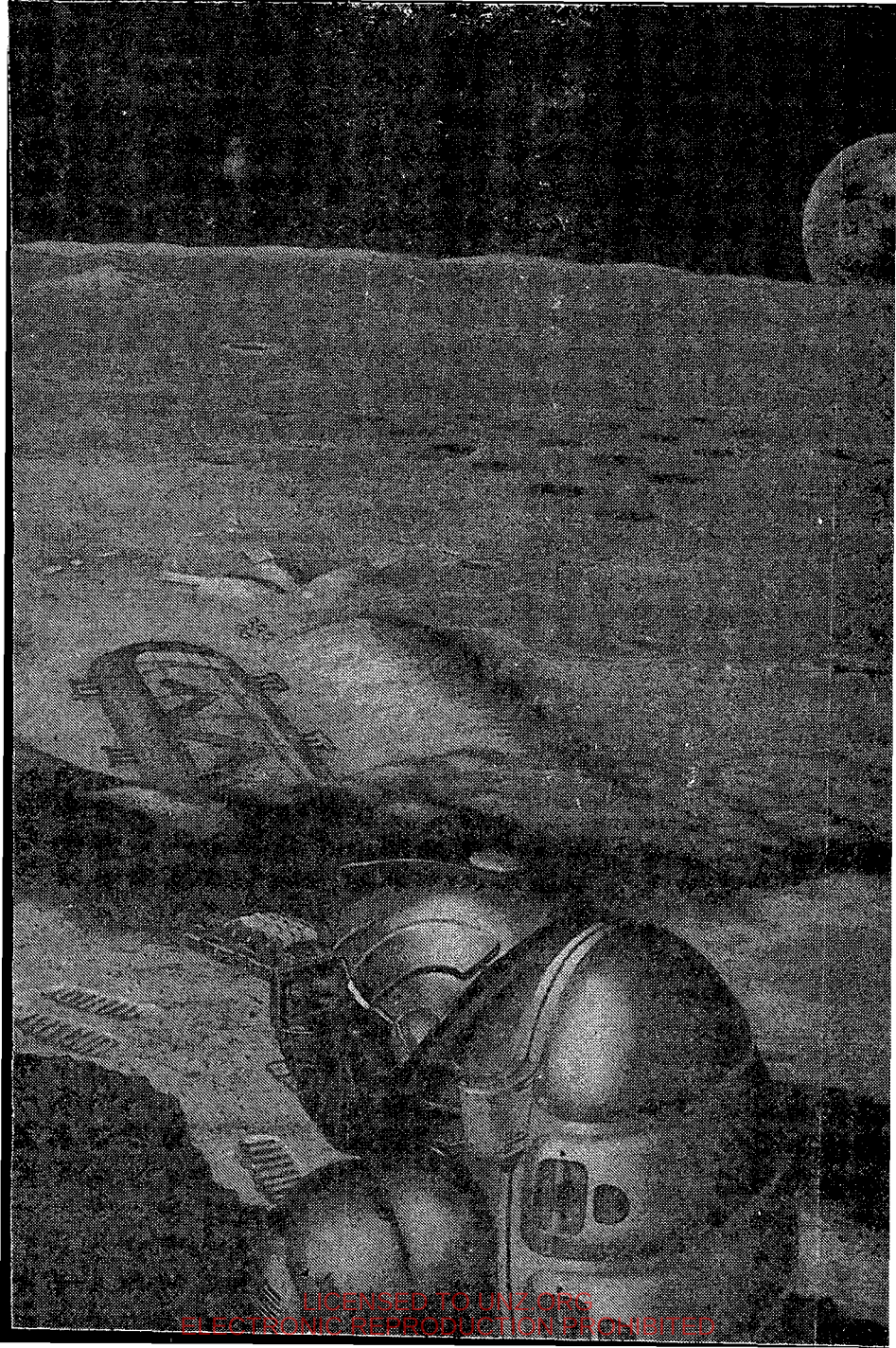
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broad expanse of rock *is* an ocean. The ground undulates gently, like the swells of a calm sea frozen forever into stone. In the soft glow of Earthlight, this lunar ocean appears grayish green in color, almost like the deep seas of Earth.

Then the Sun comes up and bathes the area in merciless harsh light. You begin to realize that you are on a vast desert of stone. Lunar rilles snake across the regolith here and there and, of course, there are the inevitable craters of every imaginable size. Rocks are strewn about as if some giant's child had left his playthings behind.

Scenic wonders abound on the Moon. A few hours' ride from Alphonsus is the Straight Wall, a 130-kilometer-long cliff jutting up from the plain of Mare Nubium. The rocky Wall rises some 250 meters from the mare, at an angle of more than 40 degrees. Far to the north is the Alpine Valley, a rift some 120 kilometers long in the Lunar Alps, along the northeastern edge of Mare Imbrium. Ranging in width from roughly six to ten kilometers, the Valley seems almost to have been dug out deliberately to connect Imbrium with Mare Frigoris.

On the way to the Valley, many visitors stop to view Mt. Pico, towering in splendid isolation 2400 meters above the plain of Mare Imbrium. Pico is one of the few lunar mountains that stands virtually alone, rather than as part of a mountain chain.

Another favorite site of visitors is the crater Opelt, where the DelCorso expedition was finally rescued. Since Opelt often serves as the halfway point for the annual Moonbase crawler-race, there are several abandoned crawlers to be seen in the area. Naturally, the craters that are most prominent from Earth, such as Copernicus, Kepler and Tycho, attract many visitors. Most of these natural wonders are reached by ballistic rockets ("lobbers"), since overland traverses would take many days.

Many of the historic shrines of the Moon can be reached by cable car or special crawler "buses" operated by the Tourist Program Office. The buses can accommodate up to a dozen tourists, and are usually staffed by a crew of three. They are equipped for overnight trips and are completely self-sufficient, with life support systems, hard suits, provisions, and communications gear.

Special bus tours offer a week-long jaunt along the route of the original Mason, Lenoire and Wayne traverse across the rim of Mare Imbrium. Stopoffs to view Mt. Pico, the Alpine Valley, and the lovely crater Copernicus are available. Lunar camp sites along the route have been improved and enlarged, and now serve as overnight stops for tour groups as large as twenty persons.

Moonwalks

One thing a lunar vacation offers that is hard to find on crowded Earth is *solitude*. There are a total of some five thousand people on the Moon, at the most. The Moon's surface area is about the same as that of North, Central, and South America combined. There is plenty of room to "get away from it all."

While Moonbase employees are generally forbidden from walking on the

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surface alone, there are specially-reserved areas where tourists (or employees) are allowed to walk on the surface by themselves. These "Moonwalk Lanes" are all inside the floor of Alphonsus, and extend for some 200 kilometers along the inner rim of the ringwall and across the floor to the central peak.

For Moonwalking, or any outdoor activity, hardsuits are available at a nominal rental fee. These pressure suits offer complete protection against the vacuum and temperature extremes of the lunar surface, and are armored against radiation. They are completely equipped with a twelve-hour supply of air, drinking water, two-way radio, and emergency survival/rescue kit.

While on Earth a hardsuit would weigh more than 250 kilograms, it weighs less than 50 kilograms in the Moon's one-sixth gravity. Even so, such a mass still has considerable inertia; the suits are therefore powered by servomotors that amplify muscle movements, so that they are quite easy to move in.

The lanes meander across Alphonsus's pitted floor, following the flattest and safest ground, skirting the rilles and craterlets that make much of the floor too treacherous for visitors to walk. One of the popular destinations for Moonwalks is the wreckage of the Ranger 9 spacecraft, which "hard landed" near the ringwall 24 March 1965 as part of the preliminary photoreconnaissance of the Moon undertaken in preparation for the Apollo program.

The Moonwalk lanes are clearly marked, and lined with emergency stations every kilometer. The stations include oxygen, telephone links, and a protective safety capsule (bizarrely nicknamed a "coffin") which can hold two persons in hard suits for 24 hours, in case a suit is ruptured or its life-support equipment breaks down.

(There have been unconfirmed reports that safety capsules have occasionally been used as "love nests." Such unauthorized use of safety equipment could endanger the life of a tourist or employee, and is grounds for employee dismissal.)

Lunar Recreations

With the exception of activities that require large bodies of water, such as sailing or water-skiing, virtually every sport played on Earth can be played on the Moon—with a difference.

It could be said that Astronaut Alan Shepard was the pioneer of lunar sports when, in 1971, he hit a golf ball with a club improvised from the handle of a piece of geological equipment and a six-iron head he had brought along with him, together with the ball. Reports vary as to how far his drive went, and the Moonbase employee who eventually found Shepard's ball discreetly refrained from measuring the distance of the shot.

Today visitors to Moonbase (as well as employees) can engage in a wide range of sporting activities—although "outdoor" sports are discouraged, for safety reasons, with the exception of Moonwalks and mountain climbing.

* * *

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Mountain Climbing

Years before the Tourism Program Office was started, the Moonbase Safety Division frowned on efforts to climb the ringwall mountains that circle Alphonsus. Yet the wall had to be surmounted regularly, since Moonbase itself is built into the inner face of the western arc of the mountains, while much of the mining and industrial work has to be done on the Mare Nubium, on the other side of the ringwall.

A cable car system was established for hauling freight and personnel over the ringwall, while plans for boring a tunnel through the mountains were developed, studied, and eventually put aside.

In the meantime, sizable teams of Moonbase personnel climbed the mountains as part of their jobs. Some of them liked it well enough to start mountain climbing for enjoyment. Word of this spread quickly throughout the base, and soon there were unofficial competitions among Moonbasers to see who could scale the highest peaks in the shortest time.

Faced with such realities, the Safety Division made a virtue of necessity and began to organize the mountain-climbing efforts, providing guides, mapping routes of various difficulties, and offering instruction on climbing techniques.

Once the Tourism Program Office opened its doors, close liaison was established with the Safety Division's mountaineers, so that vacationers could have the opportunity of scaling Alphonsus's ringwall mountains.

From the crater floor, the ringwall rises in a series of terraces to crests that average about 3,200 meters high. The tallest peak, Mount Yeager, is 3,752 meters.

Mountain climbing on the Moon is rather different from its terrestrial counterpart. The advantage of lighter gravity is offset by the necessity of wearing a hard suit. Lunar mountains generally are less rugged than terrestrial ones. While the tallest mountain chains on Earth are less than a few hundred million years old, most lunar mountains were formed three billion years ago or earlier, and have been eroded by the constant infall of micrometeorites and the huge swing of temperature extremes between the lunar day and night. Thus, while most lunar slopes are not as steep as those found among the terrestrial Alps, Rockies, Andes or Himalayas, they tend to be smoother and more difficult to scale then comparable grades on Earth. Some climbers have characterized certain slopes as "slick," or even "glassy."

Alphonsus was formed slightly more than three billion years ago, according to the best geological evidence. While its ringwall mountains are challenging to the newcomer, there are much higher peaks elsewhere on the Moon. Special climbing tours are arranged by the Tourist Program Office to the Lunar Appennines, where Mt. Bradley rises 4,400 meters.

The tallest lunar peaks are in the Leibnitz Mountains, near the south pole, where crests exceeding those of the Himalayas abound. Only special teams of professional climbers are allowed there, since the slopes are too difficult

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for amateurs and tourist facilities are not available in that rugged sector.

Other Sports and Recreations

Many of the athletic activities we are familiar with on Earth have their lunar counterparts. Any sport that involves heavy physical activity, however, looks to the newcomer almost as if it is being played in slow-motion, because of the lower gravity of the Moon.

Swimming in the recreational pool of the Main Plaza is little different than swimming on Earth, although diving is *very* different. Incredible dives from the 30-meter platform are made even more spectacular by the dream-like slow motion induced by low gravity.

On Earth, falling objects accelerate at the rate of 32 feet per second each second. On the Moon they fall at the rate of 5.28 ft/sec^2, some six times slower than on Earth.

Jai-alai is an excellent example of the difference between our two worlds. Often called "the fastest game on Earth," lunar jai-alai is at the same time as fast as its terrestrial counterpart—and slower. The ball bounds off the walls as fast as on Earth, since it has the same mass and is still propelled by Earth-evolved muscles. But the players can leap to fantastic heights and come back down slowly, dreamily in the gentle lunar gravity. As a result, Moonbase's jai-alai courts are much larger than those on Earth, and some Moonbase residents can "out play" professional terrestrial athletes.

Volleyball, tennis, handball, basketball and many others games are similarly altered by the Moon's low gravity. This allows a chance for participation to virtually anyone who wants to do so. Since a person can jump much higher on the Moon than on Earth, volleyball nets and basketball hoops are usually placed at least three times higher than they would be Earthside.

Moonbase Cuisine

Vacationers are often surprised by the variety and quality of food available at Moonbase.

Two first-class restaurants offer varied menus ranging across European, Oriental, and American traditional dishes. Virtually all the victuals, with the exception of a few specialty items, are grown at Moonbase's farms. Wine and alcoholic beverages, however, are imported and consequently somewhat more expensive than in most major terrestrial cities.

FACING THE FUTURE

In 1912, when the state of Arizona was admitted to the U.S., its first Senator, extolling the virtues of his state in a very long speech, ended by saying, "In short, gentlemen, all that Arizona needs to make it heaven is water and society."

Another Senator was heard to whisper, "That's all that hell needs to make it heaven!"

Water and society. The limit to Moonbase's growth as a community is the availability of water. Water is the key to Moonbase's self-sufficiency.

The search for water on the Moon itself continues. Moonbase's ongoing geological exploration program will

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eventually investigate every square centimeter of the lunar surface and probe deeply into the crust. Private entrepreneurs, in teams or individually, also search for water and other resources.

Thanks to Moonbase's unique combination of natural advantages, highly-skilled and motivated work force, and growing industrial capacity, the search for water is now expanding throughout the inner solar system. Despite relatively high costs, it is estimated that water and other volatiles obtained from asteroids and/or comets will allow Moonbase to become fully self-sufficient within the next five years. At that point, the only materials imported from Earth will be luxury items—and people.

In direct contrast to the immigration policies of an earlier century on Earth, Moonbase does not seek "your tired, your weak, your poor." The men and women who come to Moonbase are the best and brightest of our home world. They come from every nation, and they are allowed to work at Moonbase only after psychological screening tests have assured that they are not hampered by racial or religious or political prejudices. It is from this stock that our permanent residents are drawn.

Far from being a lonely, hazardous, uncomfortable outpost at the fringes of civilization, Moonbase is swiftly growing into a center of excellence and achievement, a safe and comfortable home where men and women can live and work in harmony and peace.

What will the next ten years bring?

The exploration of the Moon will be completed over the next decade. The entire lunar surface will be mapped, detailed chemical analyses will determine the composition of the entire regolith, and seismological probes will produce a relatively complete understanding of the composition and dynamics of the Moon's interior.

Water and other volatiles such as nitrogen and carbon will be imported from near-approach asteroids and/or comets, ending Moonbase's dependence on imports from Earth.

Moonbase's manufacturing capabilities will increasingly be devoted to building deep-space vehicles, both manned and automated, capable of journeying out to the Main Asteroid Belt. Preliminary explorations of the Belt show metal, mineral, and volatile resources many times larger than the entire Earth can provide.

Astronomical studies of the universe will continue, with special emphasis on the faint radio signals emanating from the Sagittarius region of the Milky Way. If these signals are found to be the product of intelligence, attempts will be made to establish communication.

The three star probes will be launched toward Alpha Centauri, Barnard's Star and Wolf 359. Although by ten years from now they will still be nearly four decades away from their destinations, their sensors should be able to send a wealth of information about the planets orbiting the latter two stars.

The exploration of the remainder of the solar system will continue. Moonbase, in conjunction with Lunagrad and terrestrial universities and governments, will continue to support the human

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teams on Mars and in orbit around Mercury, and the robots probing Venus, Jupiter, and the outer planets.

The recent success on Earth of bringing thermonuclear fusion power plants on-line to produce electricity at competitive commercial rates will soon bring great changes to Moonbase's electric power production. Terrestrial fusion power plants run on deuterium, an isotope of hydrogen found in water. Advanced fusion reactors can use tritium and helium-3, isotopes that do not exist on Earth but are abundant in the clouds of Jupiter. Automated spacecraft will scoop these isotopes from the Jovian atmosphere and return them to Moonbase, where advanced fusion power plants will provide abundant electricity through the lunar nights.

Moonbase itself will continue to grow. Inevitably, as our population expands and our dependence on terrestrial imports lessens, the people of Moonbase will decide to apply to the United Nations for membership as an independent state. Preliminary discussions with key leaders among the fifteen-nation consortium that now owns the majority of Moonbase Inc.'s stock have indicated that they would raise no major objections to Moonbase's political independence, as long as Moonbase operations remain profitable.

In ten years we will see an independent Moonbase, rich in water and society: peopled by healthy, motivated men and women who will raise their families here and make Moonbase their home; known throughout the solar system as a center of excellence and a happy, thriving community; sparkling with beautiful pools of fresh water and glistening fountains that splash lazily in the Moon's low gravity; alive with human joy and achievement.

That is our goal. You can help to make it happen. ■

●I look forward to the day when mankind will join hands and face the heavens in a solid phalanx to apply the combined technological ingenuity of all nations to the exploration and utilization of outer space for peaceful uses.

Wernher Von Braun

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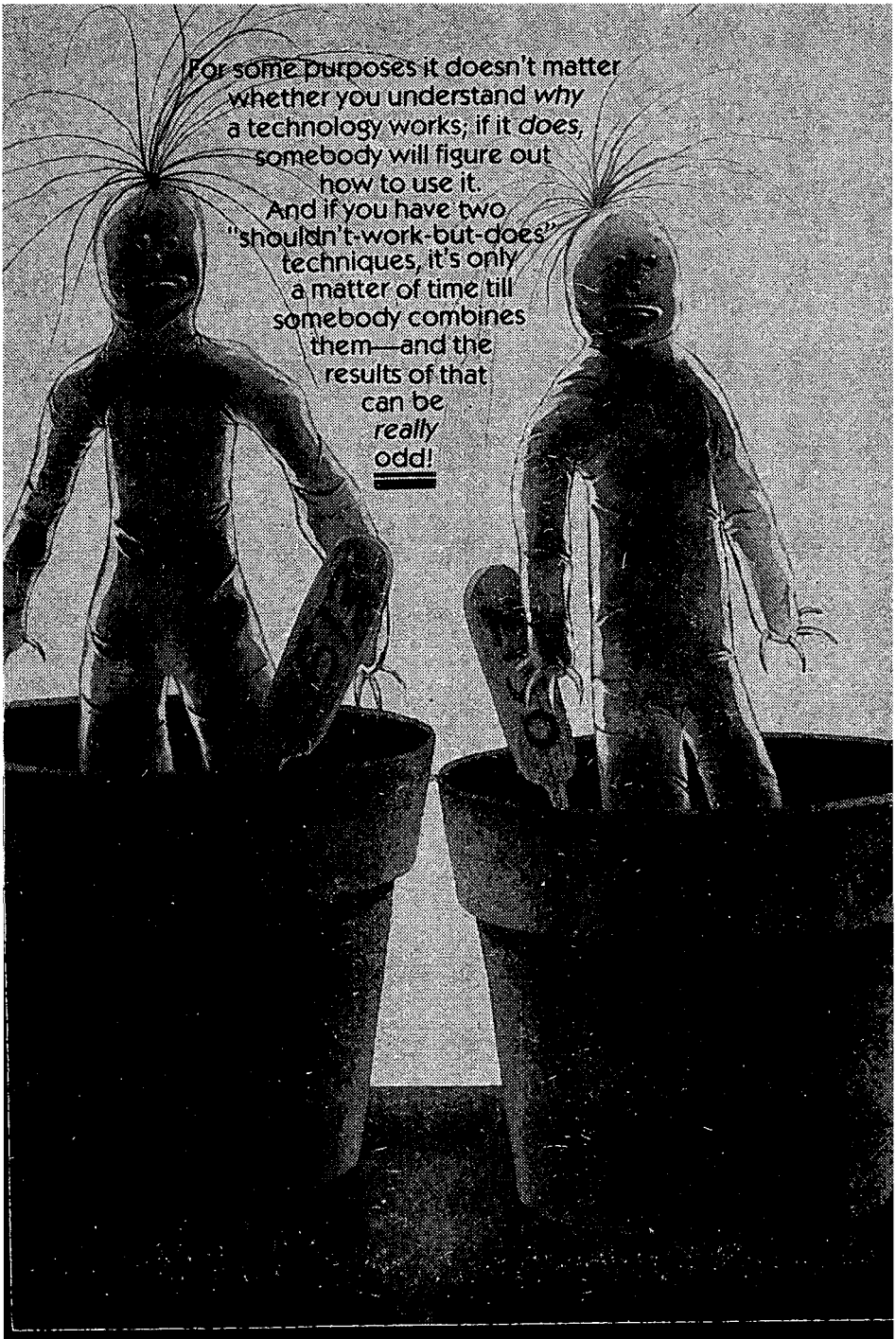
For some purposes it doesn't matter whether you understand *why* a technology works; if it *does*, somebody will figure out how to use it.
And if you have two "shouldn't-work-but-does" techniques, it's only a matter of time till somebody combines them—and the results of that can be *really* odd!

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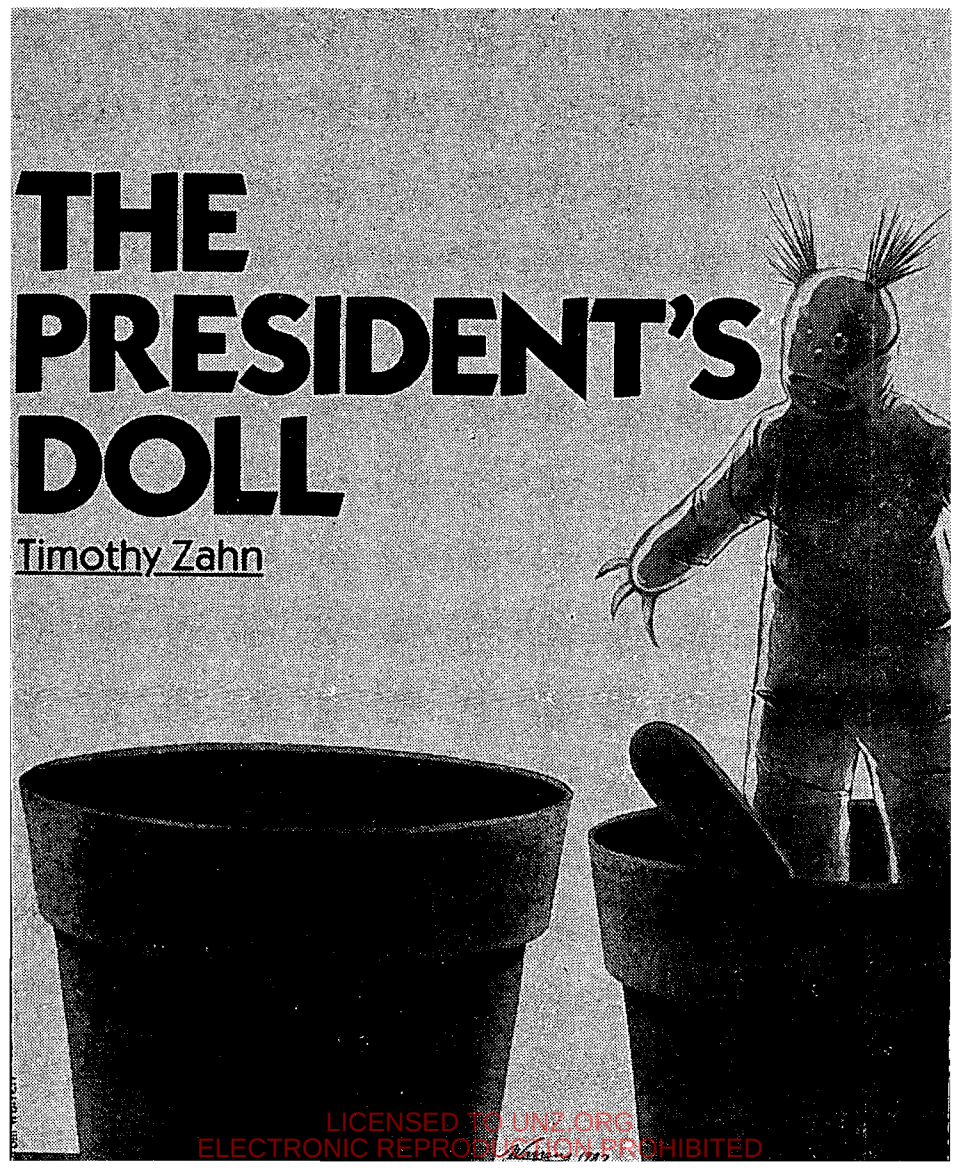
THE PRESIDENT'S DOLL

Timothy Zahn



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It started—or at least *my* involvement in the case started—as a brief but nasty behind-the-scenes battle between the Washington Police and the Secret Service over jurisdiction. The brief part I was witness to: I was at my desk, attention split between lunch and a jewelry recovery report, when Agent William Maxwell went into Captain Forsythe's office; and I was still on the same report when they came out. The nasty part I didn't actually see, but the all-too-familiar glint in Forsythe's eye was only just beginning to fade as he and Maxwell left the office and started across the crowded squad room. I noted the glint, and Maxwell's set jaw, and said a brief prayer for whoever the poor sucker was who would have to follow Forsythe's act.

So of course they came straight over to me.

"Detective Harland; Secret Service Agent Maxwell," Forsythe introduced us with his customary eloquence. "You're assigned as of right now to a burglary case; Maxwell will give you the details." And with that, he turned on his heel and strode back to his office.

For a second Maxwell and I eyed each other in somewhat awkward silence. "Burglary?" I prompted at last, expecting him to pick up on the part of the question I wasn't asking.

He did, and his tight lips compressed a fraction more. "A very special burglary. Something belonging to President Thompson. All I really need from you is access to the police files on—"

"Stolen from the White House?" I asked, feeling my eyebrows rise.

"No, the doll was—" He broke off, glancing around at the desks crowding around us. None of the officers there were paying the least bit of attention to us, but I guess Maxwell didn't know that. Or else mild paranoia just naturally came with his job. "Is there some place a little more private where we can go and talk?" he asked.

"Sure," I said, getting to my feet and snaring my coat from the chair back as I took a last bite from my sandwich. "My car. We can talk on the way to the scene of the crime."

I was very restrained. I got us downstairs, into the car, and out into Washington traffic before I finally broke down. "Did you refer to this burglared item as a 'doll'?" I asked.

Maxwell sighed. "Yes, I did," he admitted. "But it's not what you're thinking. The President's doll is—" He broke off, swearing under his breath. "You weren't supposed to know about this, Harland—none of you were. There's no reason for you to be in on this at all; it's a Secret Service matter, pure and simple. Left at the next light."

"Apparently Captain Forsythe thought differently. He gets like that sometimes—very insistent on having a hand in everything that happens in this town." I reached the intersection and made the turn.

"Yeah, well, this one is none of his business, and I'd have taken him right down on the mat if time wasn't so damn critical." Maxwell hissed through his teeth.

"So what files do you need?" I asked after a minute. "Professional burglars or safecrackers?"

He glanced over at me. "Nice guess," he conceded. "Probably both. We've checked over security at the—

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office—and it took a real expert to get in the way he did."

"Whose office?"

"Pak and Christophe. Doctors Sam and Pierre, respectively."

"Medical doctors?"

"They say yes. I say—" Maxwell shook his head. "Look, do me a favor; hold off on any more questions until we get there, okay? They're the only ones who can explain their setup. Or at least the only ones who can explain it so that you might actually believe it."

I blinked. "Uh . . . "

"Right at the next light."

Gritting my teeth, I sat on my curiosity and concentrated on my driving.

Dr. Sam Pak was a short, intense second generation Chinese-American. Dr. Pierre Christophe was a tall, equally intense first generation Haitian. Pak's specialty was obvious; the lettering on their office door proclaimed it to be the Pak-Christophe Acupuncture Clinic. It wasn't until the two doctors led us to the back room and opened the walk-in vault there that I found out just what it was Christophe supplied to the partnership.

Believing it was another matter entirely.

"I don't believe it," I said, staring at the dozen or so row planters lining the shelves of the vault. Stuck knee deep into the planters' dirt were rows of the ugliest wax figurines I'd ever seen. Figurines with bits of hair and fingernail stuck on and into them . . . "I don't believe it," I repeated. "*Voodoo acupuncture?*"

"It is not that difficult to understand," Christophe said in the careful tones and faint accent of one who'd learned English as a second language. "I might even say it is a natural outgrowth of the science of acupuncture. If—"

"Pierre," Pak interrupted him. "I don't think Detective Harland came here to hear about medical philosophy."

"Forgive me," Christophe said, ducking his head. "I am very serious about my work here—"

"Pierre," Pak said. Christophe ducked his head again and shut up.

I sighed. "Okay, I'll bite. Just how is this supposed to work?"

"You're probably familiar with at least the basics of acupuncture," Pak said, reaching into the vault to pluck one of the wax dolls from its dirt footbath. "Thin needles placed into various nerve centers can heal a vast number of diseases and alleviate the pain from others." His face cracked in a tight smile. "From your reaction, I'd guess you also know a little about voodoo."

"Just what I've seen in bad movies," I told him. "The dead chickens were always my favorite part." Christophe made some sort of disgusted noise in the back of his throat; I ignored him. "Let me guess: instead of sticking the acupuncture needles into the patient himself, you just poke them into his or her doll?"

"Exactly." Pak indicated the hair and fingernail clippings on the doll he was holding. "Despite the impression Hollywood probably gave you, there *does* seem to be a science behind voodoo. It's just that most of the practitioners never bother to learn it."

I looked over at Maxwell, who was looking simultaneously worried, tense, and embarrassed. "And you're telling

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me the President of the United States is involved in something this nutzoid?"

He pursed his lips. "He has some . . . rather intense back and stomach pains on occasion, especially when he's under abnormal stress. Normal acupuncture was effective in controlling that pain, but it was proving something of a hassle to keep sneaking Dr. Pak into the White House."

" 'Sneaking'?"

He reddened. "Come on, Harland —you watch the news. Half of Danzing's jibes are aimed at the state of the President's health."

And whether or not he was really up to a second term. Senator Danzing had played that tune almost constantly since the campaign started, and would almost certainly be playing it again at their first official debate tonight in Baltimore. And with the election itself only two months away . . . "So when the possibility opened up of getting his treatments by remote control, he jumped at it with both feet, huh?" I commented. "I can just see what Danzing would do with something like this."

"He couldn't do a thing," Maxwell growled. "What's he going to do, go on TV and accuse the President of dealing in voodoo? Face it—he'd be laughed right off the stage, probably lose every scrap of credibility he has right then and there. Even if he got the media interested enough to dig out the facts, he'd almost certainly still wind up hurting himself more than he would the President."

"He could still make Thompson look pretty gullible, though," I said bluntly. "Not to mention reckless."

"This wasn't exactly done on a whim," Maxwell said stiffly. "Drs. Pak and Christophe have been working on this technique for several years—these dolls right here represent their sixth testing phase over a period of at least eighteen months."

I looked at the dolls in their planters. "I can hardly wait to see the ads when they have their grand opening."

Maxwell ignored the comment. "The point is that they've been successful in ninety-five-plus percent of the cases where plain acupuncture was already working—those figures courtesy of the FBI and FDA people we had quietly check this out. Whatever else you might think of the whole thing, the President didn't go into it without our okay."

I glanced at the tight muscles in his cheek. "Your okay, but not your enthusiasm?" I ventured.

He gritted his teeth. "The President wanted to do it," he growled. "*We* obey *his* orders, not the other way around. Besides, the general consensus was that, crazy or not, if the treatment didn't help him it also probably wouldn't hurt him."

I looked at Pak and Christophe, standing quietly by trying not to look offended. "*Did* it help?"

"Of course it did," Christophe said, sounding a little hurt. "The technique itself is perfectly straightforward—"

"Yeah. Right." I turned back to Maxwell. "So what's the problem? Either Dr. Pak moves into the White House until after the dust of the election has settled, or else Dr. Christophe goes ahead and makes Thompson a new doll. Surely he can spare another set of fingernail clippings—he can probably even afford to give up the extra hair."

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"You miss the point," Maxwell grated. "It's not the President's pain treatments we're worried about."

"Then what—?"

"You mean you have forgotten," Christophe put in, "how voodoo dolls were originally used?"

I looked at the doll still in Pak's hand. "Oh, hell," I said quietly.

"Our theory is that it is the protein signature in the hair and nail clippings that, so to speak, forms the connection between the doll and the subject," Christophe said, gesturing broadly at the dolls in the vault. "Once that connection is made, what happens to the doll is duplicated in what happens to the subject."

I gnawed at my lip. "Well . . . these dolls were made specifically for medical purposes, right? Is there anything about their design that would make it impossible to use them for attack purposes? Or even to limit the amount of damage they could do?"

Christophe's brow furrowed. "It is an interesting question. There was certainly no malice involved in their creation, which may be a factor. But whether some other person could so bend them to that purpose—"

"If you don't know," I interrupted brusquely, "just say so."

"I do not know," he said, looking a little hurt.

"What's all this dirt for?" Maxwell asked, poking a finger experimentally into one of the row planters.

"Ah!" Christophe said, perking up. "That is our true crowning achievement, Mr. Maxwell—the discovery that it is the soil of Haiti that is the true source of voodoo power."

"You're kidding," I said.

"No, it's true," Pak put in. "A doll that's taken away from Haiti soon loses its potency. Having them in Haitian soil seems to keep them working indefinitely."

"Or in other words, the doll they stole will eventually run out of steam," I nodded. "How soon before that happens? A few hours? Days?"

"I expect it'd be measured in terms of a few weeks, maybe longer. I don't think we've ever gotten around to properly experimenting with—"

"If you don't know," I growled, "just say so."

"I don't know."

I looked at Maxwell. "Well, that's something, anyway. If it takes our thief long enough to figure out what he's got, it won't do him any good."

"Oh, he knows what he's got, all right," Maxwell said grimly. "Unless you really think he just grabbed that one by accident?"

"I suppose not," I sighed, glancing back at the rows of figurines. None of the others showed evidence of even having been touched, let alone considered for theft. "Dr. Christophe . . . is there anything like a—well, a *range* for this . . . effect of yours? In other words, does the President have to be within five miles, say, of the doll before anything will happen?"

Christophe and Pak exchanged looks. "We've treated patients who were as far as a hundred miles away," Pak said. "In fact—yes. I believe President Thompson himself was on a campaign

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trip in Omaha two months ago when we treated a stomach cramp."

Omaha. Great. If this nonsensical, unreal effect could reach a thousand miles across country, the thief could be anywhere.

Maxwell apparently followed my train of thought. "Looks like I was right—our best bet is to try and narrow down the possibilities."

I nodded, eyeing the vault door. This wasn't some cheap chain lock substitute Pak and Christophe had here—only a genuine professional would have the know-how to get into it. "Alarm systems?" I asked.

"I've got the parameters," Maxwell said before either of the others could speak. "You think I've proved sufficient urgency now for us to head back and dig into your files?"

The President's life, threatened by the melding of two pseudosciences that no one in his right mind could possibly believe in . . . except maybe that the combination happened to work. "Yeah, I think you've got a case," I admitted. "How's the President taking it?"

Maxwell hesitated a fraction too long. "He's doing fine," he said.

I cocked my eyebrow at him. "Really?" I asked pointedly.

His jaw clenched momentarily. "Actually . . . I'm not sure he's been told yet. There's nothing he can do, and we don't want to . . . you know."

Stir up psychosomatic trouble, I finished silently for him. Made as much sense as any of the rest of it, I supposed—

"Wait a second," I interrupted my own thought. "I remember reading once that for acupuncture to work the subject has to believe in it, at least a little. Doesn't the same apply to voodoo?"

Christophe drew himself up to his full height. "Mr. Harland," he said stiffly, "we are not dealing with fantasies and legends here. Our method is a fully medical, fully *scientific* treatment of the patient, and whatever he believes or does not believe matters but little."

Maxwell looked at Pak. "You agree with that, Doctor?"

Pak pursed his lips. "There's some element of belief in it, sure," he conceded. "But what area of medicine doesn't have that? The whole double-blind/placebo approach to drug testing shows—"

"Fine, fine," Maxwell cut him off. "I suppose it doesn't matter, anyway. If the President has enough belief to get benefit out of it, he probably has enough to get hurt, too."

Pak swallowed visibly. "Mr. Maxwell . . . look, we're really sorry about all this. Is there anything at all we can do to help?"

Maxwell glanced at me. "You think of anything?"

I looked past him at the rows of dolls. There was still a heavy aura of unreality hanging over this whole thing. . . . With an effort I forced myself back to business. "I presume your people already checked for fingerprints?"

"In the entryway, on the windows, on the vault itself, and also on the file cabinet where the records are kept. We're assuming that's how the thief knew which doll was the President's."

"In that case—" I shrugged. "I guess it's time to get back to the station and warm up the computer. So unless you two know of an antidote to—"

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I broke off as, for some reason, a train of thought I'd been sidetracked from earlier suddenly reappeared. "Something?" Maxwell prompted.

"Dr. Christophe," I said slowly, "what would happen if a given patient had *two* dolls linked to him? And different things were done to each one?"

Christophe nodded eagerly. "Yes—I had the exact same thought myself. If Sam's acupuncture can counteract any damage done through the stolen doll—" He looked at Pak. "Certainly you can do it?"

Pak's forehead creased in a frown. "It's a nice thought, Pierre, but I'm not at all sure I can do it. If the dolls are both running the same strength—"

"But they won't be," Maxwell interrupted him. "The Haitian dirt, remember? You can keep yours stuck up to its knees in the stuff, while theirs will gradually be losing power." He shook his head abruptly. "I can't *believe* I'm actually talking like this," he muttered. "Anyway, it's our best shot until we get the first doll back. I'm going to phone for a car—have all the stuff you'll need ready in fifteen minutes, okay?"

"Wait a second," Pak objected. "Where are we going?"

"The White House, of course," Maxwell told him. "Well, Baltimore, actually—the President's there right now getting ready for the debate tonight. I want you to be right there with him in case an attack is made."

"But the doll will work—"

"I'm not talking about the damn doll—I'm talking about the problem of communications lag. If the President has to tell someone where it hurts and then they have to call you from Baltimore or the White House and then *you* have to get the doll out and treat it and ask over the phone whether it's doing any good—" He broke off. "What am I explaining all of this for? You're going to be with the President for the next few days and that's that. As material witnesses, if nothing else."

He hadn't a hope of getting that one to stick, and he and I both knew it. But Pak and Christophe apparently didn't. Or else they were feeling responsible enough that they weren't in any mood to be awkward. Whichever, by the time Maxwell got his connection through to the White House they'd both headed off to collect their materials and equipment, and by the time the car arrived ten minutes later they were ready to go. Maxwell gave the driver directions, and as they drove off he and I got back in my car and returned to the station.

"Well, there you have it," I sighed, leaning back in my chair and waving at the printout. "Your likeliest suspects. Take your pick."

Maxwell said a particularly obscene word and hefted the stack of paper. "I don't suppose there's a chance we missed any helpful criteria, is there?"

I shrugged. "You sat there and watched me feed it all in. Expert safecracker, equally proficient with fancy vaults and fancy electronic alarm systems, not dead, not in jail, et cetera, et cetera."

He shook his head. "It'll take *days* to sort through these."

"Longer than that to track all of them down," I agreed. "Any ideas you've got, I'll take them."

He gnawed at the end of a pencil.

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"What about cross-referencing with our hate mail file? Surely no ordinary thief would have any interest in killing President Thompson."

"Fine—but most of your hate-mail people aren't going to know about the President's doll in the first place. We'd do better to try and find a leak from either the White House or Pak and Christophe's place."

"We're already doing that," he said grimly. "Also checking with the CIA regarding foreign intelligence services and terrorist organizations. These guys —" he tapped the printout— "were more of a long shot, but we couldn't afford to pass it up."

"Nice to occasionally be included in what's going on," I murmured. "How's the President?"

"As of ten minutes ago he was fine." Maxwell had been calling at roughly fifteen minute intervals, despite the fact that the Baltimore Secret Service contingent had my phone number and had promised to let us know immediately if anything happened.

"Well, that's something, anyway." I glanced at my watch. It was nearly four o'clock; two and a half hours since we'd left the voodoo acupuncture clinic and maybe as many as sixteen since the doll had been stolen.

And something here was not quite right. "Maxwell, don't take this the wrong way . . . but what the hell is he waiting for?"

"Who, the thief?"

"Yeah." I chewed at my lip. "Think about it a minute. We assume he knows what he has and that he went in deliberately looking for it. So why wait to use it?"

"Establishing an alibi?" Maxwell suggested slowly.

"For murder with a *voodoo doll?*"

"Yeah, I suppose that doesn't make any sense," he admitted. "Well . . . maybe he's not planning to use it himself. Maybe he's going to send out feelers and sell the doll to the highest bidder."

"Maybe," I nodded. "On the other hand, who would believe him?"

"Holding it for ransom, then?"

"He's had sixteen hours to cut out newspaper letters and paste up a ransom note. Anything like that shown up?"

He shook his head. "I'm sure I'd have been told if it had. Okay, I'll bite: what *is* taking him so long?"

"I don't know, but whatever he's planning he's up against at least two time limits. One: the longer he holds it, the better the chance that we'll catch up with him. And two: the longer he waits, the less power the doll's going to have."

"Unless he knows about the Haitian soil connection . . . no. If he'd known he should have helped himself to some when he took the doll."

"Though he *could* have a private source of the stuff," I agreed. "It's still a fair assumption, though. Could he have expected us to have Pak standing by waiting to counteract whatever he does? He might be holding off then until Pak relaxes his guard some."

"The theft went undiscovered for at least a couple of hours," Maxwell pointed out. "He could have killed the President in his sleep. For that matter, he could have done it right there in the vault and never needed to take the doll at all."

"Point," I conceded. "So simple

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murder isn't what he's looking for—complicated murder, maybe, but not simple murder."

"Oh, my God," Maxwell whispered suddenly, his face going pale. "The debate. He's going to do it at the *debate*."

For a long second we stared at each other. Then, simultaneously, we grabbed our jackets and bolted for the door.

It was something like forty miles to Baltimore; an hour's trip under normal conditions. Maxwell insisted on driving and made it in a shade over forty-five minutes. In rush hour traffic, yet.

We arrived at the Hyatt and found the President's suite. . . . and discovered that all our haste had been for nothing.

"What do you mean, they won't cancel?" Maxwell growled to VanderSluis, the Secret Service man who met us just inside the door.

"Who's this 'they' you're talking about?" the other growled back. "It's the *President* who won't cancel."

"Didn't you tell him—?"

"We gave him everything you radioed in," VanderSluis sighed. "Didn't do a bit of good. He says canceling at the last minute like this without a good reason would be playing right into Danzing's rhetoric."

"Has he been told . . . ?"

"About the doll? Yeah, but it didn't help. Probably hurt, actually—he rightly pointed out that if someone's going to attack him using the doll, hiding won't do him a damn bit of good."

Maxwell glanced at me, frustration etched across his face. "What about Pak and Christophe?" he asked VanderSluis. "They here?"

"Sure—down the hall in seventeen."

"Down the *hall?* I thought I told them to stick by the President."

"They're as close now as they're likely to get," VanderSluis said grimly. "The President said he didn't want them underfoot while he was getting ready for the debate."

Or roughly translated, he didn't want any of the media bloodhounds nosing about to get a sniff of them and start asking awkward questions. "At least they're not back in Washington," I murmured as Maxwell opened his mouth.

Maxwell closed his mouth again, clenched his teeth momentarily. "I suppose so," he said reluctantly. "Well . . . come on, Harland, let's go talk to them. Maybe they'll have some ideas."

We found them in the room, lounging on the two double beds watching television. On the floor between the beds, the room's coffee table had been set up like a miniature surgical tray, with Pak's acupuncture needles laid out around a flower pot containing Christophe's replacement doll. It looked as hideous as the ones back in their Washington vault. "Anything?" Maxwell asked as the doctors looked up at us.

"Ah—Mr. Maxwell," Christophe said, tapping the remote to turn off the TV. "You will be pleased to hear that President Thompson is in perfect health—"

"He had some stomach trouble an hour ago," Pak put in, "but I don't think it had anything to do with the doll. Just predebate tension, probably. Anyway, I got rid of it with the new doll."

Maxwell nodded impatiently. "Yeah, well, the lull's about to end. We think

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that the main attack's going to come sometime during the debate."

Both men's eyes widened momentarily, and Christophe muttered something French under his breath. Pak recovered first. "Of course. Obvious, in a way. What can we do?"

"The same thing you were brought here for in the first place: counteract the effects of the old doll with the new one. Unfortunately, we're now back to our original problem."

"Communication?" I asked.

He nodded. "How are we going to know—fast—what's happening out there on the stage?"

I found myself gazing at the now-dark TV. "Dr. Pak . . . how are you at reading a man's physical condition from his expression and body language?"

"You mean can I sit here and tell how President Thompson is feeling by watching the debate on TV?" Pak shook his head. "No chance. Even if the camera was on him the whole time, which of course it won't be."

"Maybe a signal board," Maxwell suggested, a tone of excitement creeping into his voice. "With individual buttons for each likely target—joints, stomach, back, and all."

"And he does, what, pushes a button whenever he hurts somewhere?" I scoffed.

"It doesn't have to be that obvious," Maxwell said, reaching past Christophe to snare the bedside phone. "We can make it out of tiny piezo crystals—it doesn't take more than a touch to trigger those things. And they're small enough that a whole boardful of them could fit on the lectern behind his notes—Larry?" he interrupted himself into the phone. "Bill Maxwell. Listen, do we have any of those single-crystal piezo pressure gadgets we use for signaling and spot security? . . . Yeah, short range would be fine—we'd just need a booster somewhere backstage . . . Oh, great . . . Well, as many as you've got . . . Great—I'll be right down."

He tossed the phone back into its cradle and headed for the door. "We're in," he announced over his shoulder. "They've got over a hundred of the things. I'll be right back." Scooping up a room key from a low table beside the door, he left.

I looked at my watch. Five-fifteen, with the debate set to begin at nine. Not much time for the kind of wiring Maxwell was talking about. "You think it'll work?" I asked Pak.

He shrugged uncomfortably. "I suppose so. The bad part is that it means I'll be relying on diagnostics from someone who is essentially an amateur."

"It's *his* body, isn't it?"

Pak shrugged again, and for a few minutes the three of us sat together in silence. Which made it even more of a heart-stopping jolt when the phone suddenly rang.

Reflexively, I scooped it up. "Yes?"

"Who is this?" a suspicious voice asked.

"Cal Harland—Washington Police."

"Oh, yeah—you came with Maxwell. Has he gotten back with those piezos yet?"

I began to breathe again. Whatever was up, at least it wasn't a medical emergency. "No, not yet. Can I take a message?"

"Yeah," the other sighed, "but he's

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not going to like it. This is VanderSluis. Tell him I called and that I just took his suggestion in to the President. And that he scotched the whole idea."

My mouth went dry all at once. "He *what?*"

"Shot it down. Said in no uncertain terms that he can't handle a debate and a damn push-button switchboard at the same time. Unquote."

"Did you remind him that it could be his *life* at stake here?" I snapped. "Or even fight dirty and suggest it could cost him the election?"

"Just give Maxwell the message, will you?" the other said coldly. "Leave the snide comments to Senator Danzing."

"Sorry," I muttered. But I was talking to a dead phone. Slowly, I replaced the handset and looked up to meet Pak's and Christophe's gazes. "What is the matter?" Christophe asked.

"Thompson's not going for it," I sighed. "Says the signal board would be too much trouble."

"But—" Pak broke off as the door opened and Maxwell strode into the room, his arms laden with boxes of equipment.

"Hell," he growled when I'd delivered VanderSluis's message. "Hell and *hell*. What's a little trouble matter when it could save his life?"

"I doubt that's his only consideration," Pak shook his head. "Politics, again, Mr. Maxwell—politics and appearances. If any of the press should notice the board, there are any number of conclusions they could come to."

"None of them good." I took a deep breath. "But damn it all, what does he want you to do?—defend him without his cooperation?"

"Probably," Maxwell said heavily. "There's a long tradition of that in the Secret Service." He took a deep breath. "Well, gentlemen, we've still got three and a half hours to come up with something. Suggestions?"

"Can you find the robber and get the doll back?" Christophe asked.

"Probably not," Maxwell shook his head. "Too many potential suspects, not enough time to sort through all of them."

"A shame the thief didn't leave any hair at the scene of the crime," I commented, only half humorously. "If he had, we could make a doll and take him out whether we knew who he was or not."

Maxwell cocked an eye at Christophe. "Anything you can do without something from his body?"

Christophe shook his head. "Only a little bit is required, Mr. Maxwell, but that little bit is absolutely essential."

Maxwell swore and said something else to Christophe. . . . but I wasn't really listening. A crazy sort of idea had just popped into my head . . . "Dr. Christophe," I said slowly, "what about the doll itself? You made the thing—presumably you know everything about its makeup and design. Would there be any way to make a—I don't know, a counteracting doll that you could use to destroy the original?"

Christophe blinked. "To tell the honest truth, I do not know. I have never heard of such a thing being done. Still . . . from what I have learned of the science of voodoo, I believe I would still need to have something of the stolen doll here to create the necessary link."

"Wait a minute, though," Pak spoke

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up. "It's all the same wax that you use, isn't it? That strange translucent goop that's so pressure-sensitive that it bruises if you even look at it wrong."

"It is hardly that delicate," Christophe said with an air of wounded pride. "And it is that very responsiveness that makes it so useful—"

"I know, I know," Pak interrupted him. "What I meant was, would it be possible to link up with the stolen doll since you know what it's made of?"

"I do not think so," Christophe shook his head. "Voodoo is not a shotgun, but a very precise rifle. When a link is created between doll and subject it is a *very* specific one."

"And does that link work both ways?" Maxwell asked suddenly.

There was something odd in his voice, something that made me turn to look at him. The expression on his face was even odder. "Something?" I asked.

"Maybe. Dr. Christophe?"

"Uh . . . " Christophe floundered a second as he backtracked to the question Maxwell had asked. "Well, certainly the link works both ways. How could it be otherwise?"

For a moment Maxwell didn't say anything, but continued gazing off into space. Then, slowly, a grim smile worked its way onto his face. "Then it might work. It might just work. And the President should even go for it—yeah, I'm sure he will." Abruptly, he looked down at his watch. "Three and a quarter hours to go," he said, all business again. "We'd better get busy."

"Doing what?" Pak asked, clearly bewildered.

Maxwell told us.

* * *

The Hyatt ballroom was stuffed to the gills with people long before President Thompson and Senator Danzing came around the curtains, shook hands, and took their places at the twin lecterns. Sitting on the end of the bed, I studied Thompson's television image closely, wishing we'd been allowed to set up somewhere a little closer to the action. TV screens being what they were, it was going to be pretty hard for me to gauge how the President was feeling.

The moderator went through a short welcoming routine and then nodded to Thompson. "Mr. President, the first opening statement will be yours," he said. The camera shifted to a mid-close-up and Thompson began to speak—"

"Stomach," Maxwell said tersely from behind me.

"I see it," Pak answered in a much calmer voice. " . . . This should do it."

I kept my own eyes on the President's face. A brief flicker of almost-pain came and went. "He's looking okay now," I announced.

"Unfortunately, we can't tell if the treatment is working," Pak commented. "Only where the attack is directed—"

"Right elbow," Maxwell cut him off.

"Got it."

"Thank you, Mr. President," the moderator cut smoothly into Thompson's speech. "Senator Danzing: your opening statement, sir."

The camera shifted to Danzing and I took a deep breath and relaxed a bit. Only for a second, though, as an angled side camera was brought into play and Thompson appeared in the foreground.

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"Watch it," I warned the others. "He's on camera again."

"Uh-huh," Maxwell grunted. "—stomach again."

"Got it," Pak assured him. "Whoever our thief is, he isn't very imaginative."

"Not terribly dangerous, either, at least so far," I put in. "Though I suppose we should be grateful for small favors."

"Or for small minds," Maxwell said dryly. "It's starting to look more and more like murder wasn't the original object at all."

"I do not understand," Christophe spoke up.

Maxwell snorted. "Haven't you ever heard of political dirty tricks?"

The camera was full on Danzing again, and I risked a glance around at the others hunched over the table set up between the two hotel beds. "You mean . . . all of this just to make Thompson look wracked by aches and pains on camera?"

"Why not?" Maxwell said, glancing briefly up at me. "Stupider things have been done. Effectively, I might add."

"I suppose." But probably, I added to myself, none stranger than this one. My eyes flicked to the table and the two wax figures standing up in flower pots of Haitian soil there: one with a half dozen acupuncture needles already sticking out of it, the other much larger one looking more like a pincushion than a doll.

But those weren't pins sticking into it. Rather, they were a hundred thin wires leading *out* of it. Out, and into a board with an equal number of neatly spaced and labeled lights set into it . . . and even as I watched, one of the tiny piezo crystals Christophe had so carefully embedded into his creation reacted to the subtle change in pressure of the wax and the corresponding light blinked on—

"Right wrist," Maxwell snapped.

"Got it," Pak said. Belatedly, I turned back to my station at the TV, just in time to see the President's arm wave in one of his trademark wide-open gestures. The arm swung forward, hand cupped slightly toward the camera . . . and as it paused there my eyes focused on that hand, and despite the limitations of the screen I could almost imagine I saw the slight discolorations under his neatly manicured fingernails. Would any of the reporters in the ballroom be close enough to see that? Probably not. And even if they did, they almost certainly wouldn't recognize Christophe's oddly transluscent wax for what it really was.

Or believe it if they did. Doll-to-person voodoo was ridiculous enough; running the process in reverse, person-to-doll, was even harder to swallow.

The picture shifted to Danzing. "He's off-camera again," I announced, getting my mind back on my job.

The battles raged for just over an hour—the President's and Senator's verbal battle, and our quieter, behind-the-scenes one. And when it was over, the two men on the stage shook hands and headed backstage . . . and because I knew to look for it, I noticed the slight limp to the President's walk. Hardly surprising, really—though I've never tried it, I'm sure it's very difficult to walk properly when your socks are full of Haitian dirt.

* * *

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The Secret Service dropped me out of the investigation after that, so I don't know whether or not they ever actually recovered the doll. But at this point it hardly matters. The President's clearly still alive, and by now the stolen doll is almost certainly inert. I haven't seen Pak or Christophe since the debate, either, but from the excited way they were talking afterwards I'd guess that by now they've probably worked most of the bugs out of the new voodoo diagnostic technique that Maxwell came up with that night. And I suppose I have to accept that all medical advances, whether they make me uncomfortable or not, are ultimately a good thing.

And actually, the whole experience has wound up saving me a fair amount of money, too. Instead of shelling out fifteen dollars for a haircut once a month, I've learned to do the job myself, at home.

I collect and destroy my fingernail clippings, too. Not paranoid, you understand; just cautious. ■

IN TIMES TO COME

● Our August issue is one of those with no serial, and therefore room for quite a variety of short fiction. The cover story, somewhat unusually, is a short whose title may not sound like science fiction: "The Love Song of Laura Morrison," by Jerry Oltion. It's not exactly what you may think it does sound like, either, but it *is* both SF and a good story. There are certain seemingly immutable principles which everything in the universe is bound to follow, and human beings have to recognize that that applies to them, too. But they also need to recognize, and use, how they're *different* from the rest of the universe...

H. Keith Henson's fact article, "Memetics and the Modular Mind," is about a new field of inquiry which may turn out to be an early form of one previously known only in science fiction. Isaac Asimov introduced "psychohistory" some decades ago, and from time to time in these pages we've explored ways that the understanding of human behavior might eventually be put on a truly scientific (meaning quantitative and predictive) footing. One of the bases may turn out to be the "meme," a unit of information that spreads through a population of minds much as a gene spreads through a population of organisms.

And those other short stories and novelettes I mentioned? They'll include Ray Brown's first new story in some time, plus others by W. R. Thompson, George Alec Effinger, Charles Sheffield, and Poul Anderson.

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on gaming

Matthew J. Costello

Traveller has, as the expression goes, "legs." For years this role-playing game of the distant future has been the premier sf game. Mark Miller's creation of the Imperium has provided the game with the raw material for dozens of classy, classic adventures.

But time marches on. And in the many years since *Traveller*'s creation (1977) many new sf role playing games have arrived. FASA's *Star Trek*, TSR's much-maligned *Star Frontiers*, FGU's *Space Opera*, and Pacesetter's *Star Ace* have all been released, as well as other specialty games like West End Games' *Paranoia* and Chaosium's *Ringworld*. And most of these games brought something new to sf role-playing, to the point where *Traveller* had begun to seem old-fashioned. It was still played, it was still good, but its days as *the* sf role-playing game were over.

And perhaps there'll never be another one in that position again.

But now Game Designers' Workshop has released *Traveller 2300* (Game Designers' Workshop, P.O. Box 1646, Bloomington, IL 61702-1646; $20 plus $2 for shipping), a sophisticated, striking role-playing game. Despite its name, *Traveller 2300* is completely independent of *Traveller*. But if any game could hope to become the definitive science fiction role-playing game for the next ten years, this is it.

I'll start by describing the game's most staggering accomplishment. The GDW design team (Mark Miller, Frank Chadwick, and Timothy Brown) has created a Near Star Map, displaying the 750 stars found within 50 light years of Sol. Based on Gliese's *Catalog of Nearby Stars* (1969 edition with updates by Halliwell and others—no home should be without one), the star map is color coded to show each star's spectra and name. A companion Near Star List displays the size, magnitude, and the crucial X, Y, Z coordinates of each star (as well as a list of binary and multiple stars). Then, to top it off, players are given a handy formula to figure out the distance between two stars, namely:

$$D = (X_1 - X_2)^2 + (Y_1 - Y_1)^2 + (Z_1 - Z_2)^2$$

where X, Y, and Z represent the coordinates of the two stars.

And then the realization dawns on you that you can go to these stars. They're real, and the game creates a convincing universe for you to travel in.

For example, there's a detailed look at recent history, from the Age of Reason (18th century) past the Ages of Industry and Technology, to the Third World War (where the game system dovetails with GDW's *Twilight 2000*).

Then the recovery began, the domination of Japan in the post-war period, the French Peace, and the Melbourne Accord that controlled space. And, most important, the creation of a working Star

(continued on page 115)

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Pain and death are powerful instruments of manipulation— but not necessarily the most extreme.

Charles Sheffield

TRADER'S PARTNER

Nicholas Jainschigg

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"She greets us as we enter the world; she is with us when we leave it. She is never more than a second away from us, as close as our own heartbeat; but when she does not stand directly before us, we cannot recall her face.

"When she calls, loud and clear, we drop whatever we are doing and attend to her needs alone. At the touch of her hand we forget work, friends, and lovers. She is the Mistress of the Universe. She is Pain."

—Dominic Mantilla

Not the message to greet a man, climbing drowsy out of bed on a rainy November morning. Mikal Asparian rubbed his eyes and scrolled the message display. At the bottom of it was a brief addition: *My office, at nine—Lyle Connery.*

Which disposed of any ideas of a pleasant and restful breakfast.

Connery had been Senior Instructor when Mike Asparian entered as a Trader Trainee. Now Connery was only one step above him—but Mike still checked the shine on his boots and straightened his jacket before he knocked on Connery's office door. And although he repeated to himself one of the first rules a Trader learned (*If you don't have confidence in yourself, no one else will*) he felt uncomfortable as the door swung open.

"Seat." Connery waved a bare, muscular arm across his desk as Mike entered. "Vacation's over now." (It was almost five weeks since Mike's last assignment). "Time for work. And Jack Lester's on-line."

Mike's anxiety level increased. He nodded at the blank screen of the data terminal. "Hi, Lover-boy. How's everything?"

"Couldn't be better." The mechanical synthesizer somehow managed a jaunty tone. "How you doing, boyo? Getting the end away regular, are yer?"

"All right, Jack, save that for later." Lyle Connery turned to Mike. "Sorry, both of you, but I'm in a hurry. Question: how much do you know about Beanstalks?"

Mike was puzzled by the question. "You mean Orbital Towers? A little bit. I know they're free-standing cables from the surface of the earth out past geosynchronous orbit; and I know the Chips would like to build one, to send stuff to space and back. What am I *supposed* to know about Beanstalks?"

"Did you know that the Chips want to make a deal with the Unified Empire?" Connery was rocking comfortably back and forwards in his chair. "The Chips have to have a place on the equator for the lower end of the Beanstalk, preferably one on high ground. They're talking the high Andes, in the middle of the Unified Empire. Did you know that?"

Mike hesitated. He had picked up scraps of information at the Traders' center that he was not supposed to know. "As a matter of fact, I did."

"Told you," cut in Jack Lester. "System leaks secrets like a bloody sieve. Hell, people even come by and tell *me* things, and what am I supposed to do about it? Hey, Mike, let's get to it. How'd you like to serve as Trader negotiator between the Chips and Greasers for the Beanstalk deal?"

There was a long silence from Mike,

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while Lyle Connery stared at him expectantly.

"Well?" said Connery at last. "I must say I expected a bit more reaction."

"I'm sorry." Mike shook his head. "I guess I'm surprised. I heard through the grapevine that Wernher Eckart was already assigned as negotiator on that project."

"Did you now?" Lyle Connery sighed—the first time Mike had heard him do it for months. "Lover-boy, you were right on target. How *do* you keep a secret in this place? The grapevine's quite right—damn it. But Wernher Eckart hasn't been heard from in three weeks; and neither has Bruno Scazzi, who we sent to find out what happened to Eckart."

"They've been captured?"

"Not captured, according to our best reports. And definitely not dead. Maybe crazy, though. Eckart sent back a deal that he negotiated, but it was terrible. The Chips wouldn't accept it in a million years—the terms were completely favorable to the Unified Empire. We tried to recall the pair of them, and they ignored the messages. From other evidence, it's clear that both of them are still alive—and they've broken Trader Oath with the Chips."

"Are you *sure?*" The question was reflexive. Lyle Connery would not have said it without compelling evidence. But that last statement shook Mike more than anything else. A Trader *never* divulged information given under Trader Oath. The conditioning was too strong. A man or woman would die under torture before speaking.

"Quite sure." Connery was staring assessingly at Mike. "I'm sure you see where I am leading. Official Mission: negotiate a Treaty between the Chipponese and the Unified Empire for tethering a Beanstalk on Unified Empire soil. And your secondary mission . . ."

He paused. Mike was way ahead of him. No Trader worth his salt ever went on a Mission with only one item on his agenda.

". . . secondary mission," said Mike. "Find out what happened to Eckart and Scazzi. Did Daddy-O calculate a success probability?"

"Certainly." Lyle Connery was looking straight at Mike, but there was a slightly uncomfortable expression in his eye. "Projected probability of success if you tackle this alone is four percent—one chance in twenty-five. But if you have the right partner, the probability goes up to thirty-six percent—better than one in three. So naturally, you'll be double teamed."

"With Lover-boy?"

"Gimme a break, Mike." Jack Lester's voice was a shout through the terminal. "I'm going to be in this bleedin' tank for another six months. What you going to do, carry me along in a paper bag?"

"Not Jack," said Connery. "As he says, the re-building of his body still has a way to go." He cleared his throat and wriggled in his chair. "So it's not Jack. You'll be partnered with Trace Muldoon. That's Daddy-O's preferred choice."

"Muldoon?" Mike sat up on the edge of his chair. "I don't know any Trader named Muldoon. Who is he?"

"She." There was a cackle from the terminal. "Trace Muldoon is a she. And

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she's a real beaut. You're in luck, boyo."

"Jack, will you shut up for a minute." Connery turned back to Mike. "She's super-competent—the highest test scores ever, Daddy-O says, higher even than yours."

"Do you or Jack know her well—yourselves?"

"Just seen her picture," said Lester, and Connery shook his head. "I don't know her, either. But Daddy-O gives her the seal of approval."

"So she knows the Unified Empire, maybe?"

"Well . . . no. She's never been there."

"You see, it's her first Mission," added Jack Lester.

Mike rocked back in his seat. "First Mission! You mean she'd be a junior partner? I can't believe it. I'm still green myself. How am I supposed to tell her what to do if I have no idea myself? I'm not *ready* for a junior partner, even with Lover-boy as Mentor—"

"Can't do it that way, boyo," interrupted Lester. "The Greasers have taps on all the communication lines. The two of you will be down there on your own."

"For Shannon's sake, then I don't care what Muldoon's scores were like—I don't want a partner who's never been on a Mission—a partner I don't even know. This is going to be a tough mission, darkest Greaserland and maybe no return ticket. I daren't take an unknown quantity down there with me."

He stood up, but he was restrained by Connery's outstretched hand on his shoulder. "Steady now, Mike. I know how you must be feeling." Mike had never heard such a conciliatory tone in his voice. "But Daddy-O doesn't get his calculations wrong."

"You'll be fine with her, Mike," added Jack. "*And think of them hot Greaserland nights!*"

"Jack, for Shannon's sake *shut up*." Connery stepped closer to Mike and looked him in the eye. "I just want to say a couple more things, if Lover-boy will let me get a word in. After that, if you want to refuse this Mission I'll pass the word to Daddy-O. First, Trace Muldoon will arrive here tonight. She has accepted. With or without you, she's willing to tackle it. So she'll be going, and she'll be teamed with *somebody*. Daddy-O looked at every other team combination for Muldoon. The Asparian-Muldoon combination is the only one with a probability of success greater than one in twenty—the chance of any other pair even making it back here is no more than one in ten. You two are better than one in three for total success. You may not need *her*—but she sure as hell needs *you*."

Mike glared at him. "That's blackmail!"

"Of course it is!" said Lester. "That's why it works."

"Jack!" Connery shook his head. "It's not blackmail. Let's call it good, old-fashioned Trader negotiation techniques."

"I won't do it!"

"I understand." Connery's voice was soothing. "But at least think it over. All right?"

After that, it did not surprise Mike at all to find that a private dinner for him with Trace Muldoon had already been arranged.

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* * *

Mike made his own checks. Trace Muldoon was a product of the Trader training center on the Cook Islands, half a world away from Mike's own home base and Azores' training camp. In spite of the rivalry between the two camps, it was easy enough to get information—formal and informal.

First Mike called out the official performance records on Trace Muldoon. He whistled in amazement. She showed up as the brightest Trainee in a generation. Although according to the transcripts she had never been south of the equator, already she spoke Greaser better than Mike. She was a natural partner for a Mission in the Unified Empire.

Trader's Rule: Use as many data points as you can get. Mike called Tip Muller, who had come from the Cook Islands camp to the Azores less than a year ago and had just finished his second Mission.

"Sure I know her." Muller nodded from the screen. "Everybody there knew her. Why'd you ask?"

"She's spectacularly intelligent, isn't she?"

Tip Muller looked puzzled. "Oh, nothing special. I mean, she's no smarter than me or you. What's the problem, Mike?"

"I'm not sure yet. Hey, Tip, if she isn't unusually smart, why does everybody there know her?"

"Well . . ." There was suddenly a cautious look on Muller's fresh-complexioned face. "Hey, Mike, do you and her have something special going?"

"I've never met her."

"All right, then, I don't mind telling you. She's famous because during training she'd been to bed with just about everyone I know. Half the camp had been through her. Mattie Muldoon, we used to call her, old Mattress-back. She wasn't exactly what you'd call shy about it, either—she'd make the first move on anyone she wanted while they were still saying hello. Everybody said Mattie even had a go with one of the Senior Traders who came by for indoctrination."

"Remember who it was?"

"Sure. Ever hear of Bruno Scazzi?"

"Just heard of him for the first time today."

"It was him. That help you at all?"

Mike stared blankly at the screen. "I don't know. But thanks a lot, anyway, Tip. I owe you one."

"Why are you asking?"

"Trace Muldoon and I look as though we're going to be double-teamed."

Tip Muller whistled. "Rather you than me. I'm not sure she can keep her mind on the Mission."

"That's what I thought. Like having a personal millstone around my neck. Anyway, I'm supposed to have dinner with her tonight and I thought I ought to know what I was getting into."

Muller laughed. "Her, unless she's changed. Hold onto your pants, Mike, or she'll have 'em off before you get to the soup course. And say hello to old Mattie from me."

He was still grinning when Mike cut the connection.

Not just a Trainee, but a Trader who sounded like a female version of Loverboy Lester. Mike tried to look at it positively as he walked down to the dining room where he was to meet Trace Muldoon.

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Very well, she had hot pants. Tip Muller knew that from firsthand experience. But she was Daddy-O's top choice for the Mission, by a wide margin. So how would she be in a negotiation?

That was the important question. Even though he and Trace Muldoon had a hidden agenda, the negotiation for the Chip Beanstalk would be real enough. And it was going to be a tough one. Traders in principle represented the interests of both sides in a negotiation, but there was always one primary client. And in this case, they would be representing the Chips, while the Greasers held all the cards. The Chips needed to build a Beanstalk from their own territory down to Earth. One look at a map of the Earth had told Mike what the Chip options were. They needed a partner at the ground end who wanted what the Chips had to trade—energy—and who were sufficiently technological to be able to handle the Beanstalk tether at the ground end. That ruled out Africa and Indonesia. The Unified Empire was sitting in a unique bargaining position.

So. Reverse it. What did the Greasers want out of this, and how badly did they need it? That might be the key to the negotiation.

Mike couldn't answer his own question. Not yet. But that was a place where Trace Muldoon might have some ideas of her own.

She was waiting for him at their table. Mike, with his prejudices against any product of the Cook training center already in place, hung back and watched for a moment before he moved forward.

Trace Muldoon was leaning back in her chair, making a steady, systematic evaluation of every other diner. Mike could see her gaze sweeping each one from head to foot, pausing for a moment, and then moving on.

He did his own evaluation of her, and could not find much to object to. She was fair-haired, without being fully blond, and she might have been beautiful but for a too-low forehead and eyebrows thick enough to give her a primitive look. So far as he could tell from her seated form, she was a little above average height and of a slim and loose-limbed build.

He approached her from behind. When he was still ten feet away she somehow sensed his presence. She turned her head and looked up at him. The hand she offered was warm and surprisingly smooth-skinned—no sign of physical labor—and he fancied that she gripped his fingers longer and harder than usual in a greeting.

"Hi," she said. Her voice was soft and low-pitched. "I'm your millstone, Trace Muldoon."

Apparently the grapevine worked both ways—and fast. Mike felt warmth in the back of his neck. "I know where you got that from, and I'm sorry. But I don't really think of you as a millstone. It's my problem, not yours. I just don't feel ready to take a junior partner. Not yet. Half the time I don't know what I'm doing myself."

"That's not your reputation." Trace Muldoon had eyes of a curious silver-grey, and she looked at Mike without ever seeming to blink. Her steady gaze ran up and down his body, measuring and evaluating him in one sweep. He sat down hurriedly.

"But if you don't know what you're

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doing," she went on, "we ought to make a good team. I don't know what I'm doing either." She gave him a first smile, and it was a warm and friendly one.

As the Chill serving robots appeared from the side hatches and placed food on the tabletops, Mike watched Trace Muldoon begin to eat. Her table manners somehow matched the pattern of her speech—precise, economical, and calm. No one would know from her facial expression whether she was eating gourmet fare or sawdust. The portions she took were small, and the only drink she had ordered for herself was water.

Fair enough. Apparently her appetites ran in other directions. Mike determinedly helped himself to wine, and felt quite pleased at her abstinence. The best Traders drank little except in line of duty—and then they were often required to drink a whole lot more than they wanted to.

The big mystery was still the difference between Tim Muller's assessment and Daddy-O's records on Trace Muldoon. Was she super-competent, or wasn't she? It was time to look for another data point. "What do you make of Dominic Mantilla?"

Mike expected a diffident answer, or maybe the neutral remark that the man seemed like a tough negotiator.

Instead Trace Muldoon shook her head firmly and said, "I suppose that we have no choice, and we will have to deal with him as the Unified Empire representative. But he's a"—she paused, picking her word carefully. Then, very firmly—"a monster. A total monster."

"Do you know him, then?"

"No, but after my briefing I went after additional information."

So had Mike—and found nothing.

"I'm sure Daddy-O laid the same quote by Mantilla on your message screen as he did on mine," she went on. "But did you know that most people call Dominic Mantilla by another name in the Unified Empire?"

"He's the Highlands Coordinator, if that's what you mean."

"I'm thinking of something a bit more descriptive. Throughout the Empire, Dominic Mantilla is known as 'The Prince of Pain.' Did you know that?"

Mike didn't know; and he wasn't sure he cared to. The Unified Empire was designed to provide every pleasure known to humankind, and the most famous joyland in the world was undoubtedly Ree-o-dee. But there were many specialty centers. If a visitor wanted drugs, and nothing but drugs, he ought to go to Sun-shone, in the south, where a thousand experiments a day were conducted into consciousness-changing. And for the wilder forms of gambling, the place to visit was Dreamtown, where the facilities were legendary.

But Dreamtown, at the top of the Andes, was also the place where Dominic Mantilla chose to negotiate the Chip Beanstalk treaty. And in Dreamtown, or near to it, Wernher Eckart and Bruno Scazzi had broken off their communication with the rest of the Traders.

"*Why* is he called the Prince of Pain?" Mike suspected he was not going to like this answer, either.

Trace shook her head, and placed a neatly-cut cube of cooked vegetable in a broad, full-lipped mouth. She chewed slowly and carefully, swallowed, and

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finally said, "Daddy-O doesn't have many facts to offer. We know there's a strange gambling game played in Dreamtown, and nowhere else in the Unified Empire. Its name is 'Counterpoint.' Then there's a sport, 'Glissando,' that's supposed to be super-dangerous and also found nowhere else. And that's all. Now you know as much about this as I do." She gave Mike another warm smile. "But by tomorrow evening, I hope we'll be seeing all that for ourselves."

Mike stared at her in surprise. Either she was the world's best person at concealing her real feelings, and therefore would make a marvellous negotiator and be a tremendous asset on the Mission; or else she had nerves of steel, and was really looking forward to sticking her head in the lion's-mouth of Dominic Mantilla's city—in which case she would in his opinion be just about the worst thing that could happen. In his mind, successful Traders never looked for risks or enjoyed danger.

One thing seemed clear already. Trace Muldoon *was* very smart, and she had done her homework. She was much better prepared for this mission than Mike.

They had both finished eating, and now she was staring at him steadily, her hands folded in her lap. Mike couldn't get Tip Muller's words out of his head. If she had been to bed with half the Cook Island training class, was she waiting for him to . . .or was *she* going to . . . and did he like that idea, or did he hate it?

"Well, Rule Twenty-seven," he said abruptly after a couple of silent minutes. "We've had the food and drink, as ordered, and now we ought to get some sleep."

She frowned at him in perplexity. "Rule Twenty-seven: 'If you have time to spare, use it on additional preparation; it will always pay off.' True; but I don't follow what you mean about food and drink."

He was just as surprised. "No—not Twenty-seven in the *official* book. I mean in 'Always Spit to Leeward.' "

Now she looked even more confused. Which made no sense at all. She *had* to know about the rule books—no one could get through a week of training without that. And no one with any sense at all would confuse one rule book with the other. The first thing Mike had learned about as a Trader Trainee was the official book of Traders' Rules. It was beautifully bound and printed, and not very thick because although there were ninety-two rules in it most of them were one-liners. Every Trainee who made it through initial selection got a nice, clean copy of the thing, fresh off the press.

Which was all very fine.

But separate from that, and somehow treated as a real supplement even though it had no official recognition at all, was the unofficial book of rules. This one was not bound, it had been printed and copied on some flaky machine that made all the commas look like periods and filled in the middle of all the letters, and it was usually tattered and greasy to the point of disgust. It contained crude language, crude thought, and occasional anonymous doggerel that just about managed to rhyme and scan.

This book had a name, too; it was called "Always Spit To Leeward"

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—which might have been one of the rules in it, but wasn't.

And which one did a Trader rely on more?

That depended on the age and cynicism of the Trader. The books were very different. But after the first month, every Trainee knew both books by heart.

Rule 34 in the official rule book reads: "Nature is not malevolent; if it appears so, you are doing something wrong."

That statement is true enough. But "Always Spit To Leeward" has something to say on the same subject: "Life don't belong in the Universe, and everything is trying to kill you. Think the sons of bitches are out to get you? Damn right they are. Get eyes in the back of your head and use 'em to watch your rear end."

Rule 79 of the official book says: "Promotion does not make you more intelligent; it only makes you *need* to be more intelligent. Be careful."

The unofficial manual says: "Been promoted? What do the bastards expect from you now?"

Rule 27 of the unofficial Rule Book, the one that Mike had been referring to, said 'Food, rest, sleep—take them whenever you can.' " And it should have been totally obvious from the context which book he meant.

Trace Muldoon was sitting frozen in front of him with an intense expression of concentration on her face. While Mike was still staring at her, she suddenly stood up and was backing away from the table. "I'll see you tomorrow on the airplane," she said quickly. "I still have to make my preparations for the flight down there."

Her expression was unreadable, but her voice was agitated. She nodded quickly to Mike and hurried out of the dining-room.

He sat for a long while with an untasted glass of wine in front of him. Was she offended? If so, *why* was she offended? Or was she just crazy? Did being crazy go with being extra-smart? Why did she say she needed time for preparation, when it was obvious that she was already very well-prepared?

Mike finally sighed and picked up his glass. It was going to be one hell of a Mission. He was very worried. And more that that, oddly enough, he was secretly irritated.

Trace Muldoon supposedly made a pass at every halfway interesting man that she met. Mike had been nervous about that possibility. But she had shown no trace of interest in him as a man.

So that left Mike—where?

To save travel time, the Trader craft that took them to the negotiation did not stop anywhere in the Unified Empire. It flew along the western coast of South America, with the snow-capped ranges of the Andes on the left, as far as Chimbote. Then the plane turned sharply inland. At the mountain city of Dreamtown, fifty miles inland, it hovered a couple of feet above the ground, just long enough for Mike and Trace to step down with their light hand-luggage, then it turned west and accelerated away. It was out of sight in less than a minute.

Mike stood on the landing square and looked around him. The air was won-

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derfully clear, but the scene was too stark to be beautiful. Dreamtown stood on a level plateau in the middle of the *Cordillera Blanca*, sitting on a mile-wide ledge with mountains on all sides. The high peaks of the Andes were off to the east, rising another ten thousand feet. To the west, the land dropped away fast, swooping down to the distant grey-blue glimmer of the Pacific Ocean. Mike thought he could see in the distance a thin scar of dazzling white cutting its way down the steep mountain side.

While he was still staring around him, a high-pitched whistle came from behind.

Mike and Trace turned quickly. Waddling towards them across the landing square came two pudgy, squat figures. The smaller one stepped right up to the two Traders.

"Hello." There was another whistling grunt, and the blunt head smiled to reveal two big, orange-yellow incisors. "I am Molly Caps, and this is Benjy Caps. We are at more than 13,000 feet altitude, but I hope that you do not feel too uncomfortable."

Caps. Enhanced capybaras.

Mike looked at the thinly-haired paw held out towards him. There were four fingers on it, with thick, hoof-like nails, and the webbing of skin betwen the digits had been surgically cut to allow more independence of movement. The capybaras were about five feet tall now, standing upright, but looking at the calloused paw Mike could see that they were probably more at ease on all-fours. Both the big rodents wore orange suits with brown pouch-pockets over their fat, tailless bodies.

He took Molly Caps's paw and shook it firmly, then watched while Trace did the same with Benjy Caps. Whatever Mike thought of the rulers of the Unified Empire, he had nothing against the Caps. The enhanced capybaras were supposed to be patient, docile, obedient, and conscientious—just about everything, in fact, that their Masters were not.

"We are your reception committee," said Molly. The words were very slightly separated from each other as the implanted synthesizer helped out the Caps' own throat limitations. Molly Caps smiled again, showing those frightening teeth (vegetarians, Mike reminded himself). All the while the eyes high in the square-muzzled head shifted randomly from side to side. "If you will please follow us, we will take you to your quarters."

She turned, and began to amble across the landing area. After a few steps Benjy dropped to walk on all fours, with a grunt of relief. The formal greeting was done, the grunt said. Now we can go back to an easier form of locomotion.

Mike caught Trace's arm as she started to follow. "I think they're both blind!"

"They are." She put her hand on top of his, and gripped surprisingly hard. "Didn't you read our briefing materials? That's one of Dominic Mantilla's nice little ways. He enhances his Caps as much as they can be enhanced—but he blinds them so they can't ever think of running away to live wild."

"I didn't see anything about that in the briefings."

"Then you didn't read everything.

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That information was in the last packet that we were given. We were supposed to read all of it. Didn't you?"

She started forward, leaving Mike standing with his mouth open. The packet she was referring to had been given to them when the flight began—but there had been five hundred pages of new material. Was she telling him she *had* read it, every word, on their three hour trip? Mike had spent the time sleeping.

He hurried after the others. Although the Caps could not see, they seemed to know exactly where they were and where they were going. Molly took them to a parapeted balcony at the edge of the land area, and pointed out and down at the hairline of white scar that curved away towards the Pacific.

"*Glissando,*" she said. "For any human who wants to play the ultimate game." She giggled.

"What is that?" asked Trace. The parapet marked the end of the flat ledge, and jutted out over three hundred feet of air. Trace was casually leaning far out, so far that Mike felt dizzy watching her. "I can't see the end of it."

"It is polished ice." Benjy Caps spoke for the first time. "*Glissando* is an ice-run all the way to the ocean. Over fifty miles distance, dropping well over two miles in height. The sleds are very carefully shaped—they are traveling at more than two hundred miles an hour when they plunge into the Pacific."

"But that would kill the rider!" said Mike.

"Yes. The player must aim for a set of rings near the end of the run, which slow the metal sled electromagnetically. A player who misses will hit the ocean at full speed and be killed." Benjy stood upright again, and the broad head lifted. The Cap stared at Mike along its muzzle with sightless, cheerful eyes. "Do you think that you will try it while you are here? It is said to be the most exciting game on Earth."

Mike looked over and shivered. "Not for me, thanks. Trace?"

She was still staring, hanging far into space. "Maybe. At the very least, I'd like to take a closer look. How are the sleds controlled?"

"From inside them," said Benjy. "A sled can hold one or two persons. We will mention your interest to the Lord Dominic." He dropped back to all fours. "Let us take you now to your own quarters. There are many experiences here in Dreamtown that you may wish to sample."

They were descending now, along a ramp that led below ground level and cut back under the surface of the landing area. As they went, the architecture became steadily more ornate and colorful. Great corridors with walls of gleaming white and gold were filled with erotic statues and flanked by holographic murals of every conceivable sport and pleasure. Mike was reminded again of a basic fact: the business of the Unified Empire was *pleasure*. They knew more here about the art of making people excited than the rest of the world put together. And Dominic Mantilla as Lord of Dreamtown was one of their accepted masters.

Trace Muldoon, Mike was pleased to see, found the erotic murals and statues a lot less distracting than he did. (But maybe the activities themselves were just too familiar to her? That thought

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was disturbing.) She was looking at everything but the murals, and with great intensity.

"Just in case we need it," she said, in answer to Mike's quiet question. "You know. Rule Fifty-seven."

Anyone can get into trouble. Make sure you plan a way out of it.

Which was Rule Fifty-seven of "Always Spit To Leeward." So Trace *did* know the unofficial rule book. Mike filed away another confusing data point.

Before he could give it much thought his attention was captured by something else. Molly and Benjy Caps had been trundling along on all-fours between Mike and Trace, explaining what they were seeing—mainly the doors and viewing balconies of the underground game-rooms. Now they both rose suddenly to stand on their hind-legs, and stopped talking. As they moved in front of Mike, he could see that Molly's plump back was quivering gently. They all turned a corner, and went through an archway into a room with a waist-high partition across its center. The two Caps advanced to the partition, then turned back to face Mike Asparian and Trace Muldoon.

"The Lord Dominic," said Benjy; and now it was obvious that he was shivering, too.

On the other side of the partition stood a tall, smiling man. He had classically handsome features, with an aristocratic nose and a beautiful, smiling mouth. He was hugely tall. Discounting the polished, high-heeled boots of black leather, Mike estimated the other man stood at least seven feet four inches, with a poised, straight-backed stance that made normal men seem puny and stooped.

"Welcome!" Dominic Mantilla stepped forward, and opened a gate in the waist-high room divider. "My dear lady and gentleman, please welcome to Dreamtown. May your visit here be the source of a hundred new delights!" He turned to the two Caps, who were standing uncomfortably upright. "Thank you, Molly, and you too, Benjy. You may leave."

The Caps bowed a little, then scuttled away, still fully upright.

"Splendid servants!" said Mantilla. "Where would we be without them?"

"Wouldn't they be more use to you if they could see?" asked Mike mildly.

"Oh, a little." Dominic Mantilla gave an expansive shrug. "They manage well enough, though, and the loss of sight isn't all that important to them. I have asked them the question, would they give up the enhancement if I gave them back their sight?—and each one has agreed that above anything they want to keep the enhancement."

Great choice. You take my eyes, or you take my brain. No wonder the Caps answered that way. But Mike did not say what he was thinking.

"Please, allow me to introduce myself," went on Mantilla. He gave a great, toothy smile. "I am Dominic Mantilla, Lord of Dreamtown, and I and the whole of this facility are completely at your disposal. May I say how much I am looking forward to working with you on this negotiation?"

Mike smiled back just as hard. He had been nice before, to people at least as unpleasant as Dominic Mantilla. He would be polite now. But Trace's ac-

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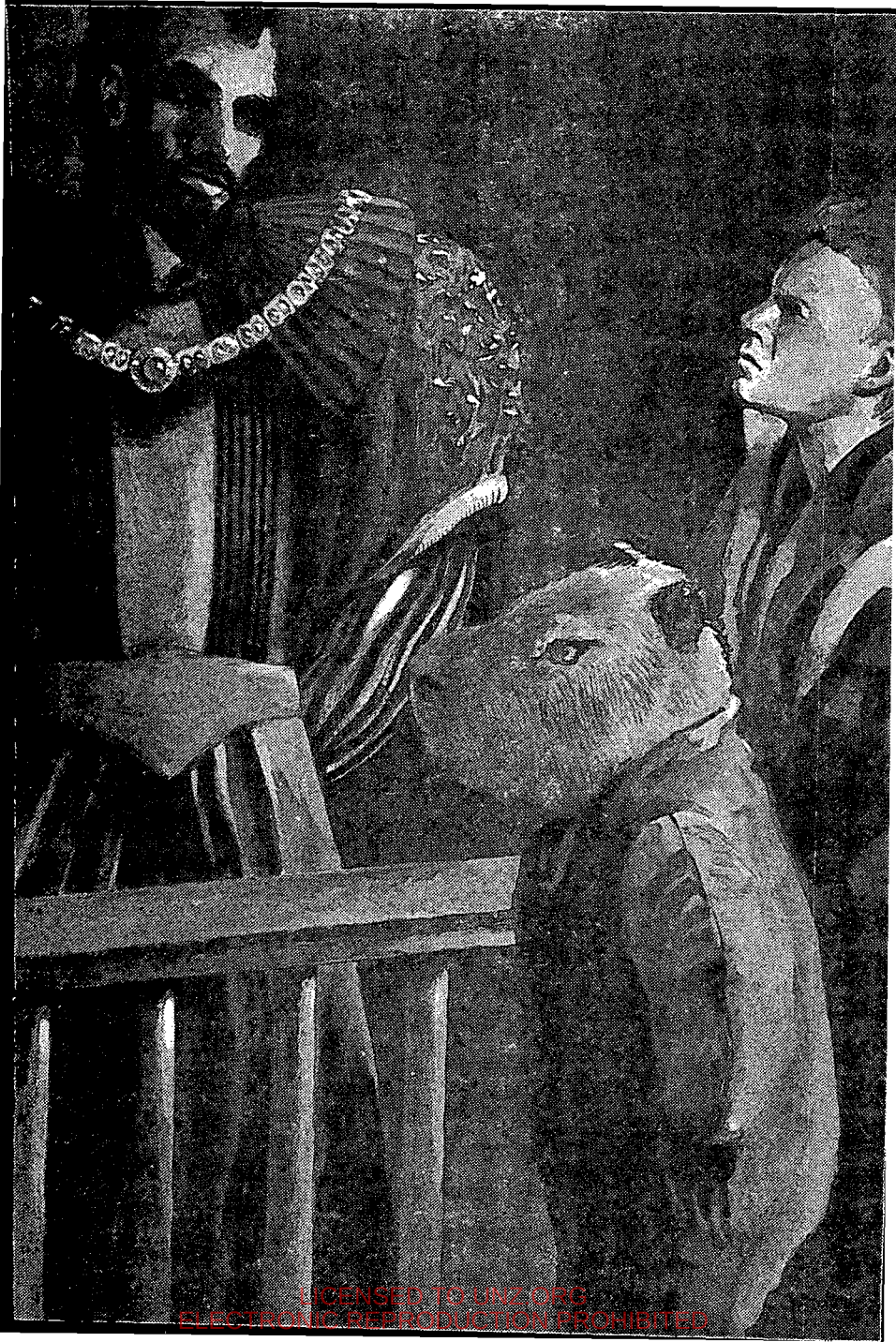

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tions were another matter. She was staring at their host as though she had never seen anything so wonderful in her whole life.

"Lord Dominic." Her voice was faint and breathless. "This is such a—a *thrill* for me."

"My dear lady!" Mantilla seized Trace Muldoon's hand, bent over it, and kissed it. Then instead of releasing her he remained crouched forward, looking deep into her eyes. A thin, bluish tongue licked at his full lips, his nostrils flared, and he seemed all set to take a bite out of her. "The pleasure of this meeting is all mine. Such beauty! No one warned me of this."

Mike stood and waited to be noticed. The air was practically purple with pheromones, and he felt like the world's most unnecessary presence.

After a minute or so Mantilla finally became aware of his presence again. The tall figure turned and shook his hand vigorously. "Trader Asparian, your reputation has preceded you. I tremble when I think of negotiating with you. If I left it for a few more hours, my courage would probably fail me completely. Therefore I have arranged that we begin at once."

While you are fresh, and we are still suffering from travel fatigue. Mike smiled cordially. "That sounds perfect. If we might first drop off our bags in our rooms . . ."

"Of course, of course, my profound apologies. Where is my courtesy?" Mantilla gave a great flourish of long-fingered hands, and waved Mike forward. "Let me show you to your rooms at once. And after we have finished talking today, I would like to offer a special event for you—a party in your honor, and a guided tour of all the facilities of Dreamtown. And of course, should one of the attractions appeal to you, you will be my guest. . . ."

His tone suggested that one of the attractions for Trace might include access to Mantilla himself. And she did nothing to disillusion him. As he showed them through to their quarters, she went inside, then at once called through the open doorway. "Lord Dominic. I wonder if you could help me a little with my case . . ."

Mike stood motionless in the entrance of his own suite of rooms. He heard low voices from the next suite along the corridor, then Trace's laugh and Dominic Mantilla's answering bass chuckle. Then the door closed. He could hear nothing at all.

He could imagine a great deal.

Mike had his own way of preparing for a hard negotiation. First he stretched out on the bed for ten minutes and tried to push all worries out of his mind—forget about Trace's lack of Mission experience, about the failure of the first two Traders here, about the overflowing self-confidence and casual cruelty of Dominic Mantilla.

Then he took a long shower, as hot as he could stand it, and allowed all the worries to seep back in. He needed them. A good negotiator *had* to have a head stuffed full of worries, because any one of them might be the item that would provide the key bargaining point.

He was in the shower for nearly a quarter of an hour. When he finally came out of it, naked and rubbing at his

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wet hair with a towel, Trace was sitting quietly on his bed. Her face was flushed.

She looked Mike over with the emotional detachment of someone choosing a wallpaper pattern. "Nice body," she said. "How did you get the scar on your ribs? It's not in your files."

"Lostland accident—before I was a Trainee. Look, would you mind awfully if I put some clothes on now?"

His sarcastic tone had no effect on her. She gave his body another up-and-down sweep with that silver-grey gaze, and said, "Mike, we need to talk—before the negotiation."

"Something new?"

"I think so, but I don't know how to evaluate it. Dominic Mantilla was saying how much he was looking forward to spending more time with me after the big reception tonight. I asked him who would be there. He said, quite casually, that two of the people would be Wernher Eckart and Bruno Scazzi. They're alive, and obviously they're not tortured or locked up in a cell somewhere. What do you make of that?"

Mike sat down naked on the bed next to Trace, a shirt forgotten in his hands. "Alive, and free. Hmmm. Normally I would say it had to be tranquilizing drugs, or brain surgery—but I've never heard of a truth drug that could break Trader Oath, and the surgery to do it would make Eckart and Scazzi into walking vegetables."

"Maybe they are. All he said was that they would be there tonight."

Mike nodded, and finally began to pull the shirt over his head. "Do you know how to run an interference test?"

"Sure. But I've never done one."

"Then tonight will be your first. I'll make sure I hold Mantilla's attention for at least half an hour. While I'm doing that, you run the test on Eckart and Scazzi. If there *has* been major surgery of any kind, the interference test will show it."

Trace nodded and stood up. "Dominic Mantilla will be coming back in twenty minutes. I'd better get ready. One other thing, Mike. Mantilla really has the hots for me. He made a pass in my rooms, and he'll certainly try again tonight. But you're the senior partner on this Mission. You decide the strategy." Her tone was totally businesslike. "I mean, should we let him have me, or not? Let me know, would you, before the reception?"

She left the room. Mike remained sitting on the bed, his shirt half-on. A senior partner on a trading team was responsible for teaching the junior member everything he knew. Mike had the uncomfortable feeling that in certain areas, Trace Muldoon knew far more than he would ever know.

His next thought had nothing to do with the Mission, but he couldn't stop it. Did Trace's lack of interest in him as a man, and her breathless fascination with Dominic Mantilla, represent her dedication to her job—or was it simple biology, and a typical woman's reaction?

There was one easy way to find out: Mike could let his own interest in Trace show through. Easy in principle—but he was scared of the possible result.

He dressed hurriedly, looking forward now to the negotiation. It might be tough, but it was a certain cure for introspection and self-doubts.

* * *

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Every tough negotiation had the same underlying structure; but no explanation to a Trainee could quite say what it was. A person had to *experience* it. There was an interplay of the opposing parties in the real thing, almost like a formal and elaborate dance, a pattern of advance and retreat on individual negotiating points that must still be part of an overall progression. And there was an inner sense of how far the process was from completion.

The negotiation with Dominic Mantilla was all wrong. Mike could not say why. The usual process was superficially at work, with proposed payments by the Chips for the right to tether a Beanstalk in the equatorial Andes, and counter-offers from the Unified Empire; and there was the ceding of sovereign rights to a small piece of that Empire.

But it was all too casual. Dominic Mantilla seemed bored by the whole process, and he was prepared to make outrageously large concessions with no matching gain.

Mike felt oddly irritated. This wasn't a negotiation! It was like fighting a small child, one who didn't want to fight at all.

"Don't try to learn much from this," he whispered to Trace, at the first chance they had to get outside the room for a quiet few minutes. "He's giving in on every point—as though it doesn't matter what he agrees to."

"Maybe he learned the lesson when the Chips rejected his earlier terms?"

Mike shook his head. His own feelings went deeper than logic. Whatever Dominic Mantilla was, he was not a negotiator and never would be. So what had he done to persuade Eckart to accept the outrageous terms he had sent to the Chips?

"He hasn't learned anything. And believe me, Trace, we can't trust him an inch."

"But he seems to trust the Chips quite a lot." She sounded defensive of Mantilla—perhaps because he was behaving towards her with enormous gallantry, deferring to her on every point.

"Trust! He doesn't trust *them* any more than I trust *him*. Trace, where did you get that idea?"

"He said it! When you were arguing about length of treaty. He said that he felt sure that nothing unworthy of their high ethical standards would ever be proposed by the Chipponese Empire. Didn't you hear him?"

Mike stared in disbelief. "Trace, for Shannon's sake, don't you recognize *sarcasm* when you hear it? He wasn't serious! Mantilla is convinced that the Chips are as crooked as he is, and that's just his way of saying it."

She stared at him with a surprised look on her face, but there was no opportunity to pursue it with her. The break was over, and they were heading back into the meeting rooms for the second half of the first round of discussions.

A negotiation of this importance ought to take several days. Mike had told Trace to allow for a week's stay in Dreamtown. But in one more hour, it was finished. Not just the opening phase—the whole thing! Mike looked at the signed agreement, and his head spun. This one was as lopsided the other way—in favor of the Chips—as the earlier proposals had been in favor of the Unified Empire. The tether site would

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be made available for practically nothing, and the treaty was as near to unbreakable as any that Mike had ever seen.

And Mantilla seemed delighted! He was smiling a huge smile, and patting Trace's hand possessively.

"Tomorrow morning," he was saying. He looked like a tall and skinny wolf, his dark eyes gleaming with poorly-controlled lust. "Tomorrow if you wish you can return home. But tonight we celebrate! In two hours, the reception will begin. I hope you are prepared to enjoy yourselves enormously. I will come by your rooms myself, and be honored to serve as your escort." He leaned over Trace, clutching her hands in his. "And you, my dear, if this is truly your first Mission—which is hard to believe, you have done so well—you will carry back a document to be proud of."

Mike looked again at the words sitting in front of him, and felt terrible misgivings. This wasn't a treaty—it was a massacre. But how was a Trader supposed to say that the deal offered was just *too good?* Nothing in the Rule Books—formal or informal—prepared for that possibility.

He watched Trace batting her eyelashes at Mantilla, and felt like a total outsider. Just what the hell was going on?

When people travel the width of the world for their pleasures, and those pleasures are drugs, sex, gambling, and everything that goes with them, any concerns about food costs are below the noise level. The reception for Mike and Trace offered every product of the Unified Empire that a human palate could desire, from coddled rhea eggs to jellied tapir's foot and huanaco tongues in aspic.

Mike stood at the side of the hall and picked morosely at a handful of anchovy crackers while Dominic Mantilla, resplendent in crimson and black suit and cloak, led Trace through the great lines of the reception. Trace seemed to be enjoying herself greatly, which didn't help Mike's feelings one little bit. He felt very edgy, and he watched all the time for any sign of Wernher Eckart or Bruno Scazzi. Would they come at all? Would they try to avoid him? Suppose they came for only a few minutes?

If that happened, he must somehow pull Mantilla away so that Trace could perform the interference test.

Their behavior when they finally arrived was a complete surprise. They headed straight for Mike.

"Hi there, Asparian." Wernher Eckart grinned at him. His manner was as casual as if they were all back in the Azores base and saw each other every day. "Glad you made the party. When did you get here?"

Drugged? They didn't act drugged, and Eckart at least seemed in perfect health. Bruno Scazzi was another matter. Like Mike and Trace, he must have had shots for height accommodation before he left the base—they were above thirteen thousand feet here. But sometimes the shots didn't work. Scazzi's wheezing voice and shallow breathing told of fluid build-up in the lungs. His slurred speech and unsteady gait suggested severe cerebral edema.

"Got here just this afternoon," said Mike at last. He wondered how to get

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a de-tox shot into them without anyone noticing. "I'll be here for a day or two, then head back."

Eckart laughed, and gave Scazzi a knowing look. "I hear you. But you won't be saying that in a couple of days. Once you get used to it here, you won't *want* to leave—ever."

"Like you two?"

"You bet." Eckart accepted the glass of *testudo* that Mike passed to him and threw it down his throat. He gasped as the iced liquid started its after-burn, and a look of ecstatic pleasure crossed his face. He beamed around the room. "Wonderful stuff. Where else could you get a drink like that?"

Not many places, Wernher, if you want it exactly like that. For one thing, the de-tox formula was a secret known only to the Traders. Mike waited, watching for any change in behavior. Nothing happened. Eckart went on smiling, looking around the room with an air of total satisfaction. A shot in Scazzi's glass produced no more effect. Mike gave it ten more minutes, then waited until he could catch Trace's eye, far away across the great room. She could be picked out easily, because of her companion's great height. Mike shook his head at her. Drugs were out. Time to test for surgical interference.

It took a little while for Trace to wander across with Dominic Mantilla in tow. His face was flushed, he had his hand on her arm, and they were standing very close.

"Dominic and I will be leaving the reception soon," she said. "But I reminded him that he promised to show you around the special attractions of Dreamtown, and he will do it before we leave. Are you ready to go with him, Mike?"

Mike nodded. Following Mantilla out of the main hall, he was uncomfortably aware that he had not given Trace an answer to her earlier question: should she go to bed with the man?

There ought to be another entry in the Rule Books. How to ruin a negotiation: Give a man an attractive junior partner, and let him spend more time worrying about her than about the Mission.

The path that Dominic Mantilla took led down a steep staircase, away from the brightly-lit and over-decorated reception hall. They descended until they reached a long corridor with thick carpet on the floor and sound-deadening tiles on the walls. The loud buzz of conversation upstairs was replaced by an unnatural hush.

Mantilla paused at the first of a dozen doors along the corridor. "This is under my control," he said softly, "but I take little credit for its functions. These are traditionalists—if I tried to change any element of the setting they would look elsewhere for their satisfaction."

Mike was looking into a dimly-lit room containing one table with half a dozen chairs grouped around it. By each chair stood a small serving trolley holding tobacco and opium pipes, lacquered jars of rice wine, silver trays of finger-sized confections and sweetmeats, and piles of red and gold trading tokens. The players—four Chipponese and two Chills—did not look up at the newcomers in the doorway. Joss sticks perfumed the air, and clouds of smoke wreathed the intent figures of the players. The only sound in the room was the faint

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click of pasteboard cards on the table's dark-green surface.

Mantilla stepped back from the doorway and headed along the corridor. "This room, and eleven others, just the same, are for the most dedicated players. Did you know that one-thirtieth of the world's wealth changes hands at cards?"

He sounded bored. As they moved on to a turn in the corridor, Mike decided that Dominic Mantilla was certainly not a gambler himself. There had been not even a glint of interest in the card games, even though the stakes at the table were enormous. It was one more (useless?) data point.

He followed Mantilla along a steadily darkening corridor, and they finally halted before a black door of heavy wood. "Another one for the traditionalists." Mantilla swung the door open. "Fully-equipped." The interior was deserted, dimly-lit by flickering wall torches. Mike recognized only half of the devices within, but that was enough.

"Surely this isn't *used?*"

Mantilla looked at him with raised eyebrows. "My honored guest, we are a commercial organization. Do you imagine that we would provide such facilities if there were no demand for them?" His tone was quietly ironic. "We provide the classical furnishings, and there has been a call for every one of the units within the past month. Eliminate any, and I would lose part of my clientele. They are sophisticated people who insist on both the equipment and the ambience."

He began to walk along the center of the long room. "The rack, of course, is a standard feature; and the braziers and hot pincers. The thumbscrew, and the iron boot, with a furnace to produce the molten lead. But some of the others are perhaps less familiar. That is the parrot's beam, to hang by thumbs and fingers; and there is the *mala mansio*—the Little Ease. We have one client who comes here regularly, and is squeezed into it for ten days at a time. And then there is the press, with fifty-pound weights, and the *strappado;* there are the hot plates of the *lamina,* the bilboes, the barbed hooks of the *ungulae*. The Iron Maiden is here largely for effect, since its use would undoubtedly be fatal. But we have had requests for its use."

Mike said nothing, and thought a great deal. He closed his eyes and followed Mantilla along the room and out into the next corridor.

The next room held just two people, facing each other across a grey cabinet. One was a Strine bigmomma, all leather and ceremonial sword, the other a Yankee cityboss. Each wore a headset that covered her down to the nostrils. Both were sweating hard, with perspiration trickling down their faces and necks. The panels on the side of the cabinet winked on and off in complex patterns.

"You know this one?" asked Mantilla.

Mike nodded. He had read the Unified Empire's list of attractions. The Strine and the Yankee were locked in life-and-death battle for the whole world. At their command, armies and armadas and missile squadrons swarmed over the globe, all simulated in detail in Dreamtown's master computer. The stakes were a good deal less than the whole world, but they were substantial. The cost of occupying the computer's max-

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imum simulation capability, with sound, vision, and all tactile inputs, was so large that only the wealthiest could afford to play at all. Mike guessed that a year's output of a Strineland biolab probably hung on the war-game's result.

"You designed this?" he asked Mantilla.

His companion shook his head. "To be honest, I find it boring. Who would play at conquering the world, when there is a real world to be conquered? Let us look at a more interesting pursuit."

They moved on, and came out onto a balcony that overlooked a cubical room at last thirty meters on each side. The whole interior was filled with a maze of transparent tunnels and ascending and descending ramps, arranged so that it was impossible for a casual viewer to see any way from one side of it to the other.

The great room was empty. Mike looked questioningly at Dominic Mantilla. "Counterpoint," said Mantilla softly. His face was intent and alive. "Watch carefully. They are about to begin."

From one of a couple of dozen small doors scattered across the wall opposite, a black cat with white paws had emerged. It took half a dozen tentative steps forward, then paused. After a moment it jerked upright and moved forward again.

"A little electric shock to its paws," said Mantilla. "Not enough to hurt, but enough to persuade the animal to move forward. The object of Counterpoint is to get one of the animals assigned to you—a Pawn—through the maze and all the way across to enter one of your opponent's doors. The first player to do that wins, and the game is over. Each player has ten Pawns, and several lines of defense. Just watch what happens."

The cat was nosing its way through a swing door, and ascending a shallow upward ramp. On the other side of the room a second cat had been released and was moving forward at the same level. After a few moments the two animals caught sight of each other. When the inspection was complete they passed each other and went on their way.

"Every game worth playing has two elements." Mantilla was crouched forward, watching the cats with obvious enjoyment. "It must call for a combination of luck and skill. Without both, a game is dull. The skill in Counterpoint is in the way in which the players release and control the Pawns, opening and closing pathways and stimulating the animals to walk along them. Each player has ten Pawns, with some say in their species, and a good player can handle all ten at once with no trouble. But there is luck also. Some things cannot be predicted. Will two Pawns back away from each other when they meet, will they fight, will they pass each other? No one can predict that. So the players must prepare multiple strategies."

As he was speaking, a second door had opened. This time something different emerged, a familiar-looking pudgy shape. It shuffled forward a few steps, sniffed the air, and looked across to the other side of the chamber.

Mike jerked around to face Mantilla. "That's a Cap! It's Benjy."

"No." Mantilla's voice was casual. "It's a capybara, but it is no longer enhanced. As you see, it is not blind, and there is no self-awareness. Benjy was

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not efficient, and twice he disobeyed orders. I was reluctantly forced to . . . demote him."

A third Pawn had been released, this one a white-furred cat, and instead of moving hesitantly along the walkways it was racing straight across the room on the most direct course it could find. Two new Pawns on the opposing side showed no interest in intercepting it. It sped along a spiraling up ramp, then over an arched crossway. In less than thirty seconds it was no more than ten meters from the gates on the far side of the chamber and heading straight for one of them.

"Last ditch defense," said Mantilla urgently. "He'll have to, or he's done for."

As he spoke there was a great crackle of electrical discharge within the chamber and a bright blue flash. The running cat leaped upward to bang against the ceiling of the ramp, then gave a single intense scream and collapsed with rigid limbs. The fur on its sides was aflame.

Mantilla nodded in satisfaction. "Just in time. That man has played before. You don't use the high-voltage until the last possible moment—and you can only use it four times altogether. The connoisseurs try not to use it at all."

In the chamber beneath them the capybara had sunk quivering to the floor, staring at the smoking body of the cat with terrified eyes.

"Look at him," said Mike. "He knows!"

Dominic Mantilla laughed. "I'm sure it seems that way, but it's not true. He was startled by the sound, that's all, and maybe he's catching the smell of burning fur; but he has no idea what happened. You'll see, he'll start to move again in a minute. If he's not careful he's likely to end up the same way himself." He looked at Mike in surprise. "What's wrong? Don't you want to watch the game to a finish? This is exciting. It's one that I designed myself."

Mike shook his head. "I must be getting back to Trace."

He hurried away from the balcony. Mantilla followed reluctantly. "One more item," he said. "Then we'll go back. This next one is not for the gambler. It's for the sportsman who has tried everything."

They were unexpectedly emerging from the underground play chambers into the open air. Mike felt an icy-cold wind on his face, and followed Dominic Mantilla into total darkness. As soon as his eyes adjusted he realized that they were standing on an open platform that jutted out from a cliff side.

"Walk carefully. The mountain side is nearly vertical here and there is no guard rail." Mantilla stepped confidently forward. "This is the loading area for *Glissando*."

The chute seemed to drop away forever. It was about fifty feet across, a half-cylinder with curved sides of polished ice. On the platform in front of Mike were half a dozen bullet-shaped coffins, each large enough to hold one or two riders.

Mantilla put one hand on Mike's shoulder, coaxing him along closer to the edge. "The run widens at the bottom, as it gets closer to the ocean—that's to make it more difficult to control the sled into the electromagnetic brake rings. And of course, close to sea level we have to maintain an ice surface by ar-

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tificial means. But no one ever complains about that . . . or about anything. It is the perfect cure for jaded appetites. Fourteen thousand feet drop in altitude, a maximum speed of well over three hundred miles an hour, and any slight control error enough to ruin you. Pure excitement. Only one person has every made the run twice."

"Then I assume he'd had enough?"

"I cannot say. On the second descent, he missed the braking rings. *Boom!*" Mantilla roared with laughter. "Perhaps you would like to try it?"

Mike shuffled back from the edge. His head was spinning. The last time he had felt such a terrible fear of heights was during a negotiation in Mohawk City, up in northern Yankeeland. He shook his head. "I don't have jaded appetites, thank you." *And if I ever develop them, I'll sure look for some other solutions.*

Without waiting for Dominic Mantilla, he set a determined return path for Trace Muldoon and the reception hall.

He had an answer to his main question before Trace said a word. She shook her head as soon as she saw him.

"Slight signs of physical change, but not nearly enough for the behavior patterns Eckart and Scazzi are showing. If only we had some way of doing a full brain scan!"

"Forget it. I'm sure the equipment is here, but Mantilla would never agree. Anything else?"

"Yes. Scazzi is dying of altitude sickness. If we don't get him out of here he won't last another week. But he doesn't seem at all worried—he couldn't be more satisfied and cheerful, though he must be finding it hard just to stand up. What did you see?"

Mike gave her a quick summary of his tour of the Dreamtown facilities, but he had to keep it short. Dominic Mantilla was entering the reception hall. Mike had time to add, "Don't let him get you alone tonight," and wonder about his own motives in saying it, and the master of Dreamtown was at their side.

Trace ignored Mike's words. Within five minutes she was again hanging on to Mantilla's arm and he was leading her off across the chamber floor. Five minutes more, and they disappeared together. Mike remained at the reception until after midnight, but neither Trace nor Dominic Mantilla reappeared. Finally he headed back to their quarters. Trace was not in her rooms.

Mike went through to his own bedroom and lay down. He had taken a precautionary de-tox shot himself, and he was not at all sleepy. It was the time when a Trader put his thoughts together and established the final overall strategy for the Mission. In this case, nothing fitted. In principle, his first task was complete; he had negotiated a treaty on behalf of the Chips, and it was a ridiculously good one from their point of view. Dominic Mantilla, representative for the Unified Empire, was worse as a negotiator than the newest Trader trainee. His line was thrills and torture, and he was surely a sadist. (Was Trace safe with him? She was supposed to be experienced with men; let's hope she knew what she was doing.)

Mike's second task had also gone as far as it could. Clearly, neither Eckart nor Scazzi had been tortured into break-

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ing Trader Oath, and they were not staying in Dreamland against their will—they loved it here, even though it was killing Scazzi.

They love it here. Mike let that thought roll around inside his head, while he thought again about Dominic Mantilla. Lord Dominic, Prince of Pain . . .

A pattern was finally beginning to form when Mike heard a soft spitting sound from the wall of the room, and felt a moment of terrible agony in the top of his head. He started to sit up.

The pain was gone as quickly as it had come. He lolled back on the hard bed and laughed aloud with satisfaction. Everything was fine—better than fine, it was wonderful. He reviewed the events since they had started on the Mission, and found that he was totally pleased with every one of them. Tomorrow they would examine the agreement between the Chips and the Unified Empire, and make whatever changes were needed; and then they would celebrate. Already he was looking forward to the celebration.

He rubbed his fingers along the bedsheet. The feeling of the cloth was cool, sensuous, wholly delightful. It made him want to fall asleep on it, to abandon himself to its caress. The prospect of a long, satisfying sleep filled him with gratification—with *excitement.*

He had been lying there for almost two hours, still sleepless but perfectly happy, when Trace Muldoon came hurrying into the room.

"Mike!" She sat down on the bed and gripped his arm. "Mike, I was sure that something terrible had happened to you. Are you feeling all right?"

"Much better than all right. I'm feeling *wonderful.*" He reached out to take her in his arms. "Trace, come and lie next to me. Come and love me. It will be the most exciting thing ever."

She had moved closer to him, but instead of lying down she took his head in her hands and examined it closely, probing delicately at the crown. She seemed to know exactly where to look. Mike lay back blissfully. She had found a wounded spot there, but it all felt marvelous.

And then, suddenly, she was tugging hard at him, shaking him. He opened his eyes again. "Trace? Don't stop. Keep on touching me."

She was trying to pull him upright. "Mike, stand up—*now!*"

"Why?"

"I have Bruno Scazzi all ready. We have to leave. We'll have to let Wernher Eckart fend for himself for a while, he's in good health. Do you hear me, Mike?" She shook him. "We have to go!"

Trace was surprisingly strong. She had Mike up to a sitting position and was lifting him under the armpits. Every touch—even the shaking—gave him intense pleasure. Mike shook his head. "Go? I'm not going—not now, not ever. Not anywhere. Come to bed, Trace. We don't want to leave Dreamtown, it's the only place you'll ever feel full happiness. Lie down next to me."

He put both arms around her (ecstatic contact!) and tried to draw her back to the bed. She resisted hard for a moment, then reached out to stroke his cheek. "Lie quiet for a moment, Mike. Then I'll come back and lie down with you. Remember now, don't do anything while I'm away!"

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She was gone. Mike lay back on the bed again, his head filled with blissful thoughts. Trace would return in a minute or two. And if she did not, that would be all right, too. Everything would be all right.

Even when she returned and began to run the bonds around his arms and legs, he was not worried. The tight bindings provided an erotic touch to his wrists and his ankles, and the close-fitting gag across his mouth felt like a lover's kiss. He smiled up at her as she hoisted him of the bed and carried him bodily out of the room.

"Not a sound!" She spoke in a whisper. "Dominic Mantilla may arrive at my rooms at any moment. Relax, and let me carry you."

She was hurrying with him along the corridor, bearing his whole weight with no apparent effort. Now they were on a downward-spiralling ramp. Mike, his head against her chest, could not speak through the gag. He inhaled her perfume through his nose and smiled up at her. When they turned a corner in the corridor and a gust of freezingly cold air hit them, Mike thrilled to its icy touch.

The interior lights of Dreamtown vanished, and Mike was looking up at a starry sky. They had emerged on to a wooden loading platform, the starting point for *Glissando*. A two-man sled was already in position at the top of the ice chute. As Trace moved forward and rolled Mike inside the curved body of the sled, platform lights suddenly came on, dazzlingly bright.

"Stop." The deep bass voice that shouted the command was unmistakable. Trace did not even look around. She strapped Mike in the rear sled position, and began to rock the metal shell forward on its runners. Craning his head up, Mike saw that the forward sled position was already occupied by Bruno Scazzi.

The sled began to tilt forward. With no emotion but pleasure, Mike saw that they were poised at the very brink of a gleaming wall of ice. It dropped away forever in front of them, curving slightly to the left as it went.

There was a sound of running footsteps from behind, hard leather boots crashing down on the wooden platform. Trace, still bending over to strap Mike into locked position, was seized around the shoulders. As Dominic Mantilla began to lift her away from the sled she allowed herself to be drawn backwards. She slid down to the level of his knees, turning and gripping his thighs as she went. As he stepped forward to avoid overbalancing, she moved her grip higher on his body and exerted her maximum leverage. Trace and Dominic Mantilla fell together on top of the metal sled.

The double impact of their bodies was more than enough to push the shell farther out onto the downward ramp of the ice. For a second the whole group teetered on the edge, then rocked past the point of recovery.

Mantilla began to scream as soon as the sled began to move forward. Ignoring Trace, he turned and scrabbled desperately at the edge of the platform. He managed a fingertip grip that held for a few moments, but then the weight of Trace, still clutching his legs and with her feet hooked into the metal shell of the sled, was too much. He lost his hold, and fell backwards, still screaming, right over the sled. When the machine

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finally began to pick up speed on the icy slope, Mantilla was just a few yards in front of it, skating downhill on his back.

He struggled to roll over, and his fingers clawed at the gleaming ice. It was useless. He was accelerating rapidly, thirty yards down the slope and still grasping hopelessly at the wall of the ice chute.

The sled had also started to move. In less than a second it was dropping almost vertically. Mike and Bruno Scazzi were huddled helplessly inside, while Trace crouched over Scazzi and held her body flat above the open shell.

The ice wall was so steep that it was almost like freefall. Mike felt the hollow sensation in the pit of his stomach, and laughed aloud with pleasure. He had no thought of fear. It was ecstasy, a feeling more intense than anything he had ever experienced in his life, so good that he was hardly able to stand so much enjoyment. He watched happily as Trace manipulated the controls of the sled, directing its course down the very center of the chute while the cold wind whipped at her body. She was still mostly outside the protecting metal shell. He saw her fair hair streaming behind her, and thought he had never seen anything so beautiful.

They were passing Dominic Mantilla. His body lacked the clean aerodynamics of the bullet-sled, and he lacked the control of his movements that Trace was providing. But he had stopped screaming, and had managed to turn so that his head was facing upwards. Trace was easing the bullet-sled past him, moving out higher on the smooth ice channel, when he reached out a long, black-clad arm and managed to get a fingerhold on the side of the shell. Mike saw the glittering dark eyes turned towards them, and felt the sled begin to yaw off course as Mantilla pulled.

Trace hammered with both fists at Mantilla's blooded fingertips, but his grip held firm. He gave a snarling laugh of triumph.

He was turning his body, ready to pull himself closer to the sled, when the descending course of the *Glissando* run met its first tight curve. They were entering a portion where the ice channel turned to the left through nearly sixty degrees. Centrifugal force moved the sled and Dominic Mantilla away from the center of the chute, upward and outward towards the right-hand lip of the chute.

Mantilla was on the outside. Trace stopped beating at his clutching hand, and bent again over the controls of the sled. She steered it out towards the top rim of the curving ice wall, nudging Mantilla gradually up the steepening slope.

He saw what was happening, and made a last attempt to pull himself up and over into the sled. It was too late. The bullet-sled's runners moved close to the outer rim of the chute, and pushed Mantilla's legs and trunk out over the edge. For a moment he was hanging there, flying along with his body horizontal, still gripping the sled's side. Then the forces became too great. With a despairing cry he lost his hold and flew out into the jumble of rock and ice that lay beyond the *Glissando* chute.

Mike had watched the whole thing with intense delight. It seemed to him that he had never been a part of anything

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remotely as enjoyable. He stared happily at Mantilla's body, laughing as it spun and shattered against iron-hard rocks and finally dropped away over a vertical cliff. He felt ready to applaud as Trace managed to regain control of the shuddering sled, and steered them back down to the safer central part of the run.

And then, a few miles farther on, it ended.

Mike felt the pleasure drain like ichor out of his body. He was suddenly cold, aching, and terrified, filled with an unendurable sense of loss. At the same time, he heard Bruno Scazzi in front of him give a long groan of pain. Instead of slipping carefree down an exciting pleasure run, now they were hurtling to almost certain death. When the sled reached the end of the downhill run it would hit the chill waters of the Pacific with destructive force.

. . . unless Trace could control the sled, with its added load of an extra person. Mike tried to free himself of his bonds, and strained upwards to watch her efforts. "Trace!"

She turned her head, just long enough to say, "Don't move. You're changing the center of mass." And then she was again making fine adjustments to the controls, aiming them arrow-straight down the middle of the Glissando run.

Five minutes more, and the waves of the Pacific were in sight. The sled was traveling at well over two hundred miles an hour. Straight ahead, square in front of their path like a bulls-eye, stood the circular arches of the deceleration rings. Before Mike realized it, they had reached the first of them.

The electromagnetic field seized the metal sled and pulled it hard backwards, slowing its motion. Mike and Bruno Scazzi, strapped tightly into the sled's interior, decelerated with it. But Trace was outside the metal body. As Mike watched helplessly, she was ripped from the sled and flew on with undiminished speed towards the grey Pacific waters.

The sound of her impact was a flat, lifeless slap, loud enough to carry back to them. Mike saw her body strike in a tangle of breaking limbs, then he closed his eyes. At that speed, water was as destructive to human tissues as solid earth.

When the sled came to a complete halt at the foot of the *Glissando* run, he did not try to release himself. Only the sound of the approaching Trader pick-up plane made him stir himself enough to begin to loosen the straps that held him. He helped Bruno Scazzi to do the same. They stood side by side on the beach.

Trace was gone. But even worse, Dreamtown was gone . . .

Both men were weeping hopelessly when they were hoisted aboard the Trader craft and the plane dipped low over the water to pick up Trace's shattered body. The injection that brought unconsciousness was a longed-for relief from mental pain.

A hangover—the worst one ever. The pain in his skull was simply too bad to believe.

Mike lifted his hand and tried to touch the top of his head. Instead of hair he encountered bandages.

"Get your bloody hands off that!" said a sharp voice. "And wait one minute."

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Mike recognized Jack Lester's tone. A moment later he felt a sharp sting in his thigh, and the pain in his head eased. He opened his eyes.

He was lying flat on his back in an aircraft cabin, and from the sounds around him they were in flight. Above him was a big blank display panel.

"Want to see the Greaser version of what happened?" said Lester. "Daddy-O, show him what we got as a news release."

The screen filled with script, and at the same time Daddy-O's soft voice read it aloud. "In an unfortunate accident that occurred after an official reception yesterday evening, Highlands Coordinator Dominic Mantilla and three visiting Traders were killed. The body of Mantilla has been recovered, but those of the three Traders are still missing. The Highland Coordinator and his visitors were in the process of negotiating an important trade agreement . . ."

In his mind's eye, Mike saw again the spinning body of Dominic Mantilla, the downward rush of the sled, and the dreadful impact of Trace's body with the water. He and Bruno Scazzi had survived only because of her self-sacrifice.

"That's the party line, Mike," said Lester gently. "A' simple accident. Come on, boyo. How's your head now?"

"Better." Mike touched his eyes. They felt grit-filled and swollen with tears. "What happened to me?"

"You had a platinum needle in your brain. It had been fired right in through the top of your skull. It's easy enough to shoot one in, right through the bone, but a damned sight harder to get it out. You'll have a headache for a few days. Bruno Scazzi too. What the hell happened to you?"

"Dominic Mantilla's people did it."

"They tortured you?"

"They had something better than that." Mike thought back, trying to recapture the incredible feeling of well-being that had filled him just a few hours ago. "He knew exactly what he was doing. If I'd had my way, I'd never have left Dreamtown."

He struggled to sit up. "Lover-boy, we've got to warn all the other Traders. We've always prepared ourselves so we don't crack under torture—"

"—and it works a treat."

"Usually. But Dominic Mantilla taught me something new, something I could have deduced without leaving the Azores if I'd been smart enough. But I had to go there to learn it. He was called the 'Prince of Pain,' sure, but his job in the Unified Empire was to create *pleasures*."

"You're right. That sounds contradictory."

"But it isn't! You should see the facilities he built in Dreamtown. They're all *intended* for pleasure, but some of them inflict pain to do it. I never realized it before, but there's no boundary line between pain and pleasure. They merge into each other. So he didn't break us with *pain*—we are all prepared for that. He just gave us so much pleasure that things like Trader Oath weren't important. I almost had everything figured out when he shot that needle into my head, and turned on the field. And after that I was too happy to do any thinking at all. I'm sure if we'd been there another

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day, I'd have rewritten that Chip treaty any way that Mantilla wanted it."

"He must have been awful confident, to go ahead and sign what he did." Jack Lester sniffed. "We read what you had, and it's a real give-away deal. Daddy-O already had a call from the lads in the Unified Empire, tryin' to wriggle out of it."

"Mantilla was convinced he had me. And the really neat part of his scheme is the limited range of the stimulating field. If anyone ever strays away from Dreamtown and gets out of field range, he'll turn right round of his own accord and hurry back—he couldn't stand the loss of pleasure. If Trace hadn't strapped us in tight, or if Mantilla had managed to shoot the needle into her skull, too . . ."

There was a long silence, until Jack Lester said, "Your move, Daddy-O. I won't handle this one."

Something close to a sigh came through the computer's voice synthesizer. "Very well. I will do it. Mike, your assumption is false. Trace Muldoon did indeed have a needle shot into her head, at the same time as you did. It was that event which made her come to your room, to see if the same had been done to you."

"But that's ridiculous! She went ahead and carried out a whole rescue, me and Bruno Scazzi. How could she possibly do that, if—"

"Listen carefully, Mike. Four months ago Trace Muldoon was in the final stages of training. In the practice session for a Trader Smash operation, there was an unfortunate equipment failure and accident. She suffered a major head injury, and was declared brain dead. Her body was not affected. So as an experiment, a molecular central processing unit and memory were implanted, and the data banks loaded from my own files. I provided the necessary microcode for the body to function, and to perform as a Trader. But of course, the new Trace Muldoon was quite immune to any stimuli provided by Dominic Mantilla's needle. And also the new Trace could not 'die,' which has been upsetting you so—the processing unit and memory were recovered intact from the broken body when it was taken from the water. . . ."

The Traders' master computer paused, taking in the scene through the arrays of visual sensors. Mike was staring upward, his face expressionless.

"What is wrong?" said Daddy-O. "Do you have trouble accepting this as true?"

Trace Muldoon's ignorance of the informal rule book—and then, within a few hours, her total familiarity with it; her inability to recognize sarcasm when Dominic Mantilla had employed it; her cool, searching look at everything she saw; her uncanny detailed knowledge of briefing materials . . .

Mike shook his head. "No. I fully accept what you say." He reached up to the control panel and closed his eyes. "I want to sleep now."

He depressed the master switch. Suddenly Daddy-O and Jack Lester were alone in the circuit.

"Perplexing." Daddy-O brought additional processing capability on-line. "The Mission was a great success, as he surely realizes. And he accepts the explanation, but not apparently its im-

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plications. Were those the reactions of grief, or anger?"

"Anger! You chip-faced idiot." Lover-boy Lester was banging around in his tank with rage. "You sit there and listen to all that, and you still have no idea what you've done! I thought you were supposed to have some sort of brain. You've probably ruined the best young Trader we've got. Can't you see what happened, you great silicon dummy?"

"I cannot. If he is wishing that he were again in Dreamtown, for the pleasures provided there, that is no more than natural—"

"Mike doesn't give a monkey's doodah about Dreamtown. It's *Trace* that's killing him. Can't you see what happened? Gor, if I had legs and you had a butt I'd come over there and kick it. He fell for her!"

"You mean—a romantic attachment?"

"I mean love, you dummy. Love! Stick up that your Josephson junctions."

"Love." There was another moment of silence. "Ah, yes, I did not allow for love. I am sorry. That is my error. Do you think that—"

But Jack was no longer on-line. Like Mike, he had broken the connection with Daddy-O.

In the next five seconds. Daddy-O put in the equivalent of a million years of human thought on the subject of love. But what that swirling dance of electrons meant in terms of human emotions, no one would ever know. ■

ON GAMING

(continued from page 85)

Drive in 2136. This historical section, with its Mexican-American wars and tired reportage of local conflicts even as nations set up colonies outside the solar system, has a gritty realism.

And while old rivalries live (like that between France and a newly-reunited Germany) nationalism has, in general, given way to an active, commercial pursuit of neighboring star systems.

Oh, yes, "Contact" has been made with five different intelligent alien species, at least three of which are space faring.

The game system is sleek, intelligent, yet easily grasped. In combat, for example, characters perform actions based on initiative, which is basically a measurement of coolness under fire. Skills have a difficulty rating and time duration, and every character has core skills (useful in the interior, core region) and frontier skills, such as survival and first aid. All important activities are considered tasks, and success depends upon the difficulty of the task and the role of ten-sided die. A character with certain assets can have a greater chance of success with a difficult task.

The character generation system is so straightforwardly presented as to be almost an instant, immediate activity. One of the many forms included is a character data sheet to record your character's name, nationality, home world, skills, as well as more personal information such as mass and body type.

Nothing appears overlooked in the game. Vehicle sections (including ATVs and a host of hover tanks) and weapon sections (including hefty "smart guns") are thorough. Star ship travel, though complex, is thoroughly explained and

(continued on page 127)

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Probability Zero

LEFT TO RIGHT, AND BEYOND

Harrison Roth and Isaac Asimov

(EDITOR'S NOTE: In our January 1987 issue we published a Probability Zero piece by Isaac Asimov, called "Left to Right." About the time that appeared, and when hardly anybody had yet seen it, Isaac was the featured speaker at a "Science Fiction with Isaac Asimov" weekend at the Mohonk Mountain House, near New Paltz, New York. Among other things, in his opening remarks to the program participants he read "Left to Right" aloud—but without an ending. Teams of participants were then challenged to come up with their own endings, to be submitted to Dr. Asimov in writing and also presented dramatically before the entire assemblage at the conclusion of the weekend, in competition for prizes including a chance at publication in *Analog*.

Mere words, of course, can only hint at the theatrical splendor of the shenanigans that ensued. The winning entry, printed below, was the only one with any resemblance to the original, but Dr. Asimov was the first to concede that this one, in certain respects, goes well beyond his. So you don't have to dig out your January issue, we've reprinted Isaac's beginning, down as far as, "...and dropped through." After that, the winning team, "Volans," is on its own. Harrison Roth's teammates unanimously insisted that he receive sole credit for authorship, but they must share credit for the dramatic nuances here left to your imagination. They include Mrs. Roth, Chaucy Bennetts, Dr. and Mrs. Jon Way, and Mr. and Mrs. William I. Atwood.)

Robert L. Forward, a plump, cherubic physicist of Hughes Research Laboratories at Malibu, and occasional science fiction writer, was demonstrating the mechanism in his usual bright and articulate manner.

"As you see," he said, "we have here a large spinning ring, or doughnut, of particles compressed by an appropriate magnetic field. The particles are moving at 0.95 times the speed of light under conditions which, if I am correct, a change

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in parity can be induced in some object that passes through the hole of the doughnut."

"A change in parity?" I said. "You mean left and right will interchange?"

"*Something* will interchange. I'm not sure what. My own belief is that eventually, something like this will change particles into antiparticles and vice versa. This will be the way to obtain an indefinitely large supply of antimatter which can then be used to power the kind of ships that would make interstellar travel possible."

"Why not try it out?" I said. "Send a beam of protons through the hole."

"I've done that. Nothing happens. The doughnut is not powerful enough. But my mathematics tells me that the more organized the sample of matter, the more likely it is that an interchange, such as left ro right, will take place. If I can show that such a change will take place on highly organized matter, I can obtain a grant that will enable me to greatly strengthen this device."

"Do you have something in mind as a test?"

"Absolutely," said Bob, "I have calculated that a human being is just sufficiently highly organized to undergo the transformation, so I'm going to pass through the doughnut hole myself."

"You can't do that, Bob," I said in alarm. "You might kill yourself."

"I can't ask anyone else to take the chance. It's *my* device."

"But even if it succeeds, the apex of your heart will be pointed to the right, your liver will be on the left. Worse, all your amino acids will shift from L to D, and all your sugars from D to L. You will no longer be able to eat and digest."

"Nonsense," said Bob, "I'll just pass through a second time and then I'll be exactly as I was before."

And without further ado, he climbed a small ladder, balanced himself over the hole, and dropped through.

As Robert L. Forward dropped through the hole, he saw that it was not a toroid, but a solid shape whose cross-section was an octagon.

Robert L. Downward said, "All I have to do is climb down through the donut and I'll be able to return to my world!"

Robert L. Upward said, "All I have to do is climb up through the donut and I'll be able to return to my world!"

Robert L. Outward said, "All I have to do is climb out of this donut and I'll be able to return to my world!"

Robert L. Inward said, "All I have to do is climb into myself and I'll reach the

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essence of my being!''

Rob L. Hubbard found himself arguing with Isaac Asimov: ''Leave me alone! I've just founded the science of Donutetics!''

Robert L. Backward found himself growing younger and younger until he became even younger than an infant and curled into a fetal position. Suddenly he found he had made a circle of himself and had been transformed into a donut! His last thought was, ''If only I can get a scientist to jump through me, I might be retransformed.''

Robert L. Transward saw Isaac Asimov, not to be outdone, jumping through the odd-looking donut. There was a clap of thunder and a howl of pain.

Two people stared at each other. The man said, ''Let me help you up.''

''Take your hands off me, take your hands off me, take your hands off me!'' the woman replied.

''Stop talking!''

''I can't stop talking. I'm Roberta Asimov. Take your hands off me.''

''You're Roberta Asimov? I can't take my hands off you—I'm Forward Isaac.''

EPILOGUE

After it was all over, Forward said to Asimov: ''Wow! I feel like I traveled the eight-fold path to Enlightenment.''

Asimov said: ''No, watching you, I was more reminded of the eight positions of sexual congress.''

''Eight?''

''Yes, Face to Face
Face to Side
Face to Back
Side to Side
Side to Back
Upside Down
Inside Out and
The Pluperfect Subjunctive.''

Forward: ''Whatever, it was quite an experience. Could you do something with it as an author?''

Asimov: ''As always, I'm in the lurch; I'm always in the position of being . . .

LEFT TO WRITE '' ■

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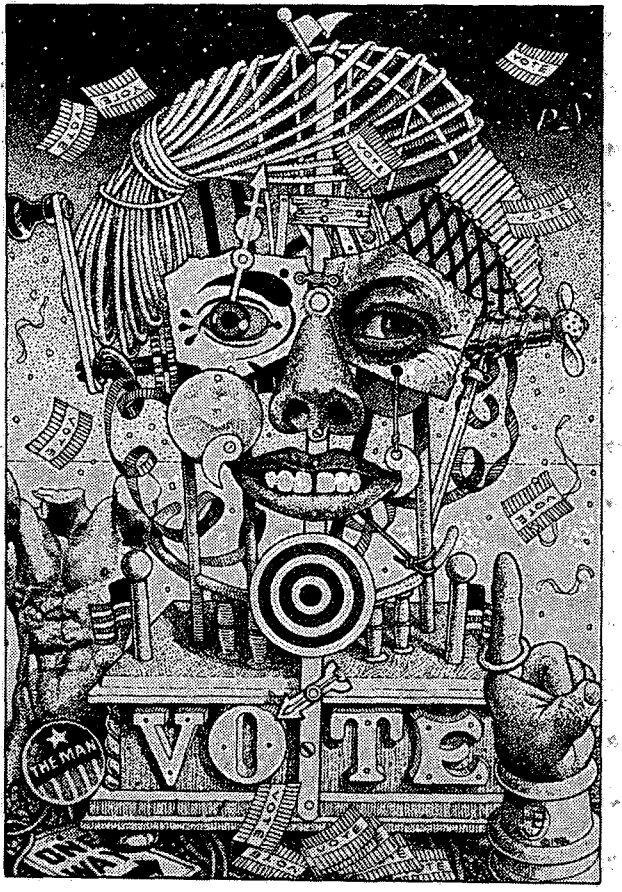
ALL THE PEOPLE, ALL THE TIME



Hank Jankus

W.T. Quick

You've seen the beginnings of this story in your mailbox. And technology is improving . . .

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"Here's an example," Bingham Edwards said to The Man.

The Man was forty two point three years old, old enough to project a reassuring maturity, yet young enough to be attractive to the female vote. His light blonde hair had been dyed a sandy brown, because blondeness projected a certain untrustworthy image, at least according to the latest surveys. The new color was comfortable. The hair fell in a youthful but controlled mop on his forehead, recalling a candidate of bygone years who still retained the cachet of martyrdom. The Man's suit was impeccably tailored, but not in the fashionable pastels of the sophisticate. His teeth were white and perfect, but there was a small space between the top two incisors. That space was perceived as appealingly sexy.

Bingham Edwards called him "The Man," even in his private thoughts. It was his fifth campaign, and each candidate had been pretty much like all the others. All the candidates seemed to like being called "The Man." For an instant, he wondered if a female candidate would like being called "The Woman"? Hell, maybe she would like being "The Man," too.

Bingham Edwards thought they were all jerks, basically. Cookie cutter jerks. He had noticed that none of them seemed very bright, but that didn't matter. He didn't deal with the candidates at all, if he could help it. When he had something important to say, he talked with one of the staff members. Or one of the staff computers.

The Man's eyes were slightly glazed. Edwards sighed. "Here's an example," he said again, raising his voice.

"What? An example of what?" The Man said, startled.

An example of what's going to get you elected, you idiot, Edwards thought, but what he said was, "An example of ITEM, chief."

"Item? What item?"

"Individually Targeted Enhancement Modules," Edwards repeated slowly. I wonder if he moves his lips when he thinks? "The new system we're going to use to get your message out to the voters."

At the word "voter," the candidate visibly brightened. An attractive spark began to glow in his perfect blue eyes. Edwards wondered how he could get colored contact lenses to do that.

"Oh, yes," the candidate said. "That's very important, isn't it?"

It would be a disaster if we really got you out to them, Edwards wanted to say. "Yes, chief, it is. And that is exactly what ITEM will do. You know that the national data pool is immense, right?"

"Right," the candidate agreed forcefully. "Uh, what is the national data pool?"

Oh, my god, thought Edwards. "Perhaps I didn't phrase it correctly, chief," he said smoothly. "All it means is that each government agency continually collects information about the public at large. The tax guys have their data. The census people. Commerce. The intelligence agencies and the FBI. The data pool is the sum total of all that information. We can find out just about anything concerning any individual, simply by asking the data pool the right questions."

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"Well, that's easy enough," the candidate said. "Like credit cards, right?"

"Like what Joe Blow preferred to smoke after screwing his next door neighbor's wife on March 12, 19—," Edward mumbled.

"What?"

"Nothing, chief. Anyway, we have several things going for us here. Since you are a bonafide candidate for the Presidency, certified by the Demotech Party—"

"With secret service bodyguards and everything," The Man interjected eagerly.

"Right, chief, those too," Edwards said patiently. "That means by law you are entitled to access the national data pool."

"I am?"

"Yes, you are. It's been law ever since Kendall Sinclair used the tax records to blackmail support back in the Infogate Scandel in 19—. If the President can use the pool, so can any legitimate candidate, as well. It's in the Campaign Fairness Act. So we can pick out almost anybody and know a lot about them. Now. We can also reach them. The latest surveys show that ninety-two percent of the voting public has access to a PCVT."

"I know what that is," The Man said. "Personal Computer Video Terminal."

Edwards resisted an urge to strangle The Man. "Right," he said. "So you see what we have here. We can reach every voter on an individual basis. Which is exactly what we are going to do."

"Oh, good. Everybody should know what I stand for."

Edwards choked. "Sorry, sir. A little catch in my throat. Yes, everybody should know. So today, you are going to make a speech, and we will record it."

The Man thought for a second. "Wait a minute. If I'm going to speak to each voter individually, shouldn't there be a different speech for each one? After all, I don't say the same things to the League of Women Voters and the Ku Klux Klan, do I?"

Probably, thought Bingham Edwards. If we let you out without a muzzle. "Not exactly," he replies. "Here. Read a little of your speech." He handed The Man several sheets of hard copy.

The Man took the papers and glanced at Edwards. "Won't I need a teleprompter for this?"

"Not for this," Edwards assured him. "Just go ahead and read. We're after something different here."

The Man looked uncomfortable at the thought of actually reading something from a printout instead of a monitor screen—after all, he had to turn pages and everything—but he bore up under the unfamiliar idea.

He shuffled the papers and straightened up. The transformation was amazing. His voice deepened, became assured and almost fatherly. His blue eyes beamed compassion. His chiselled features rearranged themselves into something resembling a living Mount Rushmore.

No wonder this oaf has a believability index in the high nineties, Edwards thought.

"My fellow Americans," The Man began. The word "Americans" had at least twelve syllables when it came roll-

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ing off his tongue. Edwards shook his head in admiration.

"The quick brown cow leaped handily over the silver spoon. In this exactly trying time of deepened chocolate cakes, we, as citizens, can do nothing but open lardbuckets—"

The Man paused. "Say, Edwards, this doesn't make a whole lot of sense, does it?"

As much as most of your speeches, Edwards decided. "It's not supposed to make sense, sir. We're filming and recording a verbal-visual composite. When we're done, the computer will break this session down into very tiny bits. It will then put those bits together into anything it wants. The result will be an individual speech, tailored for each one of those voters out there. You see?"

The Man exhaled in relief. "I was kind of worried about that. I was afraid I'd have to make billions of speeches. That would take a lot of time."

The sun would cool first, Edwards thought. "Exactly right, sir. So don't pay any attention to what you're saying." Stupid. He never does anyway. "Just read it through and be natural. Okay?"

"Right," The Man said happily. "The wonders of technology, eh, Edwards?"

"The wonders of technology," Edwards agreed weakly.

Homer Fields sat in the living room of his farmhouse outside Muncie, Indiana, eating scrambled eggs and sausage, and watched the morning farm report. Hogs were up, wheat steady. He was wondering if the hot weather would hold long enough for his corn acreage to get full growth, when the videoscreen flickered and the smiling face of The Man appeared.

"Damn politicians," Homer muttered, reaching for his remote control; then The Man said, "Homer Fields. How are you this fine Hoosier morning?"

"What?" said Homer Fields.

"I want to thank you for inviting me into your home today, Homer," The Man went on. "We have some things to talk about, man to man."

Homer stared at the screen, a forkful of scrambled eggs forgotten halfway between plate and lips.

"I know you miss your fine wife, Edna, may she rest in peace," The Man said unctuously. "You have my condolences. It's kind of lonely without her, isn't it? Especially since those two ungrateful kids of yours have left the farm to work in the city?"

Homer put down his fork. "Damn right," he mumbled.

"It must be hard, running those three hundred acres all by yourself. What with the price of corn going down all the time, and you with that million dollar mortgage."

The old farmer nodded at the screen, mesmerized.

"Well, Homer, help is on the way. If I am elected, my promise to you is that the very first thing I do will be to see that a bill gets passed to support the price of corn. And the second thing will be to create a new agency to help you with that mortgage. How does that sound, Homer?"

"Sounds damned good," Homer said.

"Yes, it does," The Man said. Homer didn't really notice that The Man

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had spoken before Homer had quite finished his reply.

"So just keep me in mind when election time rolls around, my friend. You take care of me, and I'll take care of ou. Remember, we're all in this together."

Homer recognized the tag line. It was the campaign slogan for The Man. Before, it had sounded like the bullshit every candidate spouted. Now, he decided, it had a certain ring to it. A ring that he liked.

Minnie Eberhardt carefully rolled over in the hot tub on her deck overlooking the hills of Marin County. She had to be careful because she weighed two hundred and thirty pounds. Pleasingly plump, she called it.

The delicious man on the call-in show had asked her to let him know how she felt about pet abortions. The hatchet-faced woman on his show was in favor. She wove horror stories about legions of wild cats roaming the streets of San Francisco. But when Minnie thought about it, all those cute unborn kittens —she supposed they were cute—brutally yanked from their mothers' wombs, it made her considerable amount of blood run cold. Just as she reached for her input pad, the screen flickered, then steadied on the face of The Man.

"Oh, get away, you—" Minnie said.

"Hello Minnie Eberhardt," The Man said.

Minnie froze; her cheeks—she looked like she had swallowed several apples —quivered in wonder. "Huh?" she said.

"Are you enjoying that wonderful California weather? I'm sure you are," The Man continued. "Anyway, Minnie, I wanted to have a little chat with you. I'm running for President, as you know, and I decided to check into your situation a bit. Now, Minnie, I want you to know that some of my best friends have a tiny ah . . . shall we say . . . problem. With their build, I mean. And I think each of those people—every American, in fact—should be able to make the most of their God-given abilities. So I just want you to know that one of the very first things I will do when I'm elected is to send a bill to Congress that will allow government grants for those who wish to attend health clubs for the purpose of self-improvement. Self-improvement is very important, don't you agree?"

Minnie stared at the screen. Visions of joining five, even six health clubs danced through her well-ventilated skull. All those *men!* "Very important," she whispered dazedly.

"Yes, I was sure you'd agree," The Man continued. "So, Minnie, when it comes time to cast those votes out in California, you'll remember me, won't you?"

Minnie sank back into her hot tub, frightening two gulls unwary enough to perch on the sundeck's railing. Free health clubs, mmm? And that *delicious* little space between his front teeth. Yes, she decided, she would remember.

Clarence "Big Heat" Brown was just winding up the chop-chop on half a kilo of synthecoke paste when The Man interrupted his favorite hour of Dr. Joan's Solid Gold Sex Problems. Big Heat Brown liked the dancers, even though he thought the show beneath him. He suspected that his Harvard classmates

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would probably disapprove, but what the hell.

"Shee-it," said Big Heat.

"Hello, Clarence Brown," said The Man.

"How you, muh-fo?" Clarence replied. It was hard for him to keep up the street jive crapola, although his position as the thirty-fifth ward's largest dealer of illegal substances demanded a certain style not learned in Harvard's ivied halls. He worked on it at home, just to keep in practice. This talking head seemed as good an audience as any. For a moment he tried to work out how they were doing the ad; decided that somebody had a hell of a tap-and-feedback program routed into the national data pool, then decided he didn't give a shit.

"Clarence—"

"Mistah Brown to you, honkie," Big Heat muttered.

Unfazed, the man rumbled on. "How is Chicago this fine afternoon? Wonderful, I'm sure."

"Jes fine, boss," Big Heat replied. "We darkies be beating our feet on about half a megabuck of the very best paste."

"Great!" said The Man. "But even Chicago has its problems, as I'm sure you know. Your neighborhood, for instance, has one of the highest arrest rates for drug pushers of any city in the nation."

"That right? Must be all those ghetto rats I got out there dealing," Big Heat said. "They ain't driving those Caddies on no welfare checks, huh."

"So, Mr. Brown, I'm sure you'll be pleased to know that one of my very first acts as President will be to use your neighborhood as the pilot for my Hash Smash program. When I am through, there won't be a single purveyor of death within miles of your home."

Big Heat stared at the screen, so startled that he forgot his accent momentarily. "You do that, you vacuous asshole, and I will come to Washington and shoot you myself," Clarence Brown, Harvard '86, said levelly.

"So be sure to remember me when you go to the polls, Clarence," the Man said.

"Bet your ass," said Big Heat Brown.

"We're in the shits," Bingham Edwards said.

Robert Hamilton, The Man's head programmer, picked a speck of lint from the lapel of his suit, and nodded. Kirby Sanders, The Man's campaign manager, hitched his beer belly into a more comfortable position, and said, "Damn right we are, Bingo. And what are you gonna do about it?"

They sat, or in the case of Sanders, sprawled in a suite in the St. Charles hotel in San Francisco. The suite, one of three "Presidential" suites in the building, was decorated in a blurry mix of Elks Clubroom and early cathouse. Every ashtray was mounded with crushed cigarette butts and mangled cigar stubs. Crumpled plastic beer cans overflowed the trash cans and crested in waves in the corners. Chicken bones molded on greasy plates. The air conditioning system seemed to cough and stutter in its efforts to clear the room of several varieties of smoke.

Bingham Edwards said, "Uck. I can't drink any more beer. Does anybody have any real booze?"

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Kirby Sanders rose, grunting; stumbled to a side table, fumbled through the mound of garbage, and retrieved a half-empty bottle of scotch. "You want ice?" he asked.

"Just give me the bottle," Edwards replied. "Don't bother with a glass, either." True to his word, he upended the bottle, swallowed several times, gasped, and placed it on a clear spot on the coffee table, within easy grabbing distance. "Better," he said. "A little. Okay, let's summarize. The Man is good, but his opponent is better. They're kicking the hell out of us on the individual targeting stuff. Bobby, you're the programming genius. How come is that?"

Hamilton rubbed his eyes. "It's not the program. We're reaching just as many people. The other guy comes across better, is all. More believable. I told you that gap in The Man's teeth was a lousy idea."

"So, we get rid of the gap," Edwards replied. "Can't your machines do that?"

"It's not his frigging teeth," Sanders exploded. "The man is an idiot. He comes across like a stuffed dummy on video. About as believable as a bar of soap. We've got to do something drastic, or we'll all be down the tubes."

"Well, I've tossed an idea around with the technical boys," Edwards said slowly, "It's pretty drastic."

"Anything short of burning him at the stake is okay with me," Sanders said. "That, too, if nobody minds swearing in a charcoal briquet."

Edwards considered. "No, I think he has to be able to talk. Anyway, polling and statistics agree with you, Kirby. He just isn't believable. He has to interact more. And—lucky us—our science boys say they can cobble a rig that'll do just that. We still use the same individual access routes, but The Man will talk with you, just like he was in your living room, in person. Real question and answer stuff."

The programming chief stared at Edwards. "How the hell can they do that?"

Bingham Edwards grinned. "They plug him into the damned computer. Some kind of tricky operation, so they can run the wires right into his skull. They're sure it will work. And it'll give us a hell of an advantage. No matter what the other side does, it'll look like they're using an animated form letter."

The campaign director scratched his stomach. "Is this thing safe?" he asked.

"Who cares?" Edwards replied.

"Right," Sanders said. "Let's do it."

Clarence Brown, duly registered voter, made very sure that he was home on election day. He had a personal interest in the vote. When the time came, he typed in his registration code, waited for confirmation, and then made his choice.

As his manicured fingers danced over the data pad, he couldn't resist adding one other bit of input.

"Die, you muh-fo," he typed in The Man's slot. Then he shut down his machine and left. He had some business with one of his partners, a local representative of the Drug Eradication Agency.

The same three men met in the kitchen of a rambling farmhouse near the Maine coast. The farmhouse was on the grounds of a huge estate which sur-

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rounded a seventy room palace. The Man's grandfather had called it a "cottage." Since The Man thought himself one of the people, his staff decided that the rustic farmhouse made a better image than a rambling limestone castle for the location of his obligatory "home precinct" vote.

It was raining outside and the roof leaked.

"Well, we did it," Bingham Edwards said. "He went over the top with Colorado. The rest is gravy." Edwards's eyes felt filled with sand. He knew there were dark bags beneath them. At least the others didn't look any better.

"Yeah, wonderful," Sanders replied. "So who gets to tell the press guys? You want the honor, Bingham? I can see it now. 'Sorry, gentlemen, but the American people have just elected a vegetable to lead them for the next four years.' "

"The damned doctors aren't sure of anything! They examine him, say he's healthy as a horse, and shake their heads."

"No stroke, heart attack, nothing like that?"

"Not a thing," Sanders said. "We've had him hooked up to the computer all day, ready for his victory speech. But when we unplugged him, well—you saw it."

Bingham Edwards shuddered. He remembered the alert stare, the crisp, handsome features, and the little trail of saliva down The Man's perfectly formed chin. "Well, at least he looks okay," he said slowly. An absolutely awful thought was beginning to form in his mind.

He ignored it for the moment and said, "What about the Veep?"

Sanders and Hamilton stared at him. "Normal, she's worse than he is drooling. Besides, I don't see her signature on any of our paychecks."

Which reminded Edwards that he was paid to think absolutely awful thoughts. "Well," he said, "I guess we can always fake it."

"What?" Sanders and Hamilton said in union.

"Think about it. Presidents get kind of weird sometimes, don't they? Well, what if the President has a thing about face-to-face meetings? We can do everything by screen. Even the Cabinet meetings. We can always fake a few assassination attempts and claim security. Bobby, your computers have enough slices to do anything we want, don't they?"

Robert Hamilton jerked suddenly, startled from his reverie. "Sure. We can. But what about—I mean, the President. A dummy?"

"Who the hell *runs* the government anyway?" Edwards said savagely. "We do, that's who. Staffs. Advisors. Technicians. Computers. How many people ever see the President, face to face? Damn few. Besides, would you guys let The Man decide anything, even if he was okay?"

Sanders snorted. "Hell, no. I wouldn't let him decide which side of the street to walk his dog on."

"So things go on as they would, anyhow. It's just for real, this time. He can take the oath in absentia. Uh, is that allowed?"

The campaign manager scratched his head. "All the Constitution says is that

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he has to swear to it. It doesn't say where, or who gives it, just so he does it before he officially takes office."

"He can have an accident. No, a disease. Something contagious, but not dangerous. Take the oath from his bed. On camera, of course. Will it work?"

"Have to," Sanders replied.

"Okay," Edwards said. "Bobby, what about the programming? Is it going to be a problem?"

"It shouldn't be. We'll use the White House mainframe. It's an UltimaCray. Biggest machine there is."

"All right, then" Bingham Edwards said. He inhaled, then exhaled explosively. He stared at the two faces before him. "It's a go?"

The men nodded slowly. "It's a go," they agreed.

Deep beneath the Virginia countryside, protected from anything less than a direct fusion strike, the UltimaCray lay shrouded in walls of cryogenic shielding. The heart of it was a chunk of aligned crystal matrix about the size of a basketball. Not far from that gem-like center was a white room. The room was lined with high-speed terminals and fine-resolution monitors. Through that room and into that heart flowed information from all the great machines of the Executive Branch. Census information went there. The National Security Agency. Tax and Treasury data. Anything and everything.

For one short moment, every monitor in the white room flickered with jagged patterns of cool, green light. It only lasted a second, and then it was over.

Nobody paid any attention. Had they done so, and translated the light patterns into sound analogs, they might have heard something very much like laughter.

In Chicago, Clarence "Big Heat" Brown watched the Man's face smiling from his vidscreen and said, "Shee-it. The muh-fo got in anyhow. So much for one man's vote."

Luckily, his business was portable. He sighed and began to pack. ■

ON GAMING

(continued from page 115)

is quite manageable. There are a number of technological innovations such as genetic engineering, organ replacement, and the anagathic regimen which has increased the human life span to 200 years.

And more . . . Foundations play a large role in the game, giving cash to expeditions in return for film and publication rights. The American, Chinese, and French have extensive colonies, "arms" as they are called in the game, on many neighboring star systems. And the game is post-*Aliens*, the hot film from last summer. The weapons, the mood, the gung-ho women in futuristic khaki, are all well suited for an extraterrestrial "bug hunt."

The designers at DGW have been creating classic games for a long time. *Traveller 2300*, from its classy Cyberdeco design to its mind-boggling star map, is state-of-the-art sf role-playing in every respect. ■

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The Alternate View

OVERREACTION

G. Harry Stine

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In contrast to my alternate columnist, Dr. John Cramer, who concentrates on science, I've tried to concentrate on technology, history, and systems. However, allow me now to discourse on science—political science.

I'm not at all certain that this field of human endeavor can truly be classed as a science by the Swartzberg Test: "The validity of a science is its ability to predict." Political science doesn't really pass that test yet, although computer analysis has provided some assistance ever since CBS News used the Eckert-Mauchly UNIVAC I to predict the outcome of the 1952 presidential election. (Long before the polls closed, the early returns from key precincts allowed UNIVAC I to predict that Eisenhower would defeat Stevenson by 438 to 93 electoral votes; the actual count came out 442 to 89. Close enough for government work . . .)

It has been said that our form of government is crisis-oriented and reactive. It responds to things that have happened by adopting legislation and enacting regulations. In a newspaper interview after serving in the United States Senate since 1952, Barry M. Goldwater replied to the question of whether we were getting bad legislation or too much legislation with: "Both." He observed that when he was a freshman Senator in 1952, there might be 200 calls for a vote in an entire congressional session whereas now there are 200 or more votes every month.

Almost 15 years after the Arab oil embargo and the "energy shortage" that really wasn't (as I pointed out before in a column on shortages), there are 25 congressional committees dealing with the "energy problem."

Furthermore, although elected officials take an oath to protect the Constitution of the United States of America, it is patently obvious by their public actions that most of them are protecting (1) their reelection potential, (2) their friends, and (3) their state constitutions—not necessarily in that order.

There's a sick joke to the effect that when seven people lose their lives in a space shuttle accident, Congress convenes a fact-finding committee, but when 70,000 people die from lung cancer, Congress votes a tobacco subsidy.

The Interstate Highway System was supposed to be completed in 1972 at a cost of $40 billion. Fifteen years after the scheduled completion date, the Interstate Highway system (a) isn't finished yet, (b) has cost more than twice as much as estimated, and (c) is already wearing out. It was supposed to save 4,000 lives per year, yet the highway death toll still hovers around 45,000 per year in spite of a 55-mph speed limit imposed on highways designed for 70-mph speeds.

If these little tidbits give you the impression that the U.S. governmental system is acting like a truck driver who is blind, drunk, and out of control, you're right. The system is running

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you're right. The system is running blind, drunk, and out of control. . . .

And there isn't a lot that we can do about it because only about 30 percent of the federal budget is actually under control; the rest goes for entitlement programs mandated by federal law.

Voting in congressional and presidential elections is important if for no other reason that you can always vote *against* a candidate you don't like. Maintaining control over the congressional legislative process is ineffective when citizens' letters are pitted against lobbyists, the news media, and hysteria. And you can always react by voting *against* the congresscritter who did something you don't like the next time the system cycles.

But there is something that we can do directly: participate in the regulatory system. Especially when a federal bureaucracy overreacts.

Such participation doesn't assure you'll get what you want. But, if you do it right, it may keep you from getting something you don't want.

The rules are simple. The federal government publishes proposed regulations in *The Federal Register*. Once capable of being read in a few hours, today the weekly edition is about the size of the Yellow Pages for a sizeable city. Therein an agency publishes a "Notice of Proposed Rule Making" (NPRM) setting forth the background, rationale, and exact wording of proposed regulations it wishes to adopt. The public is given 60 to 90 days to tender responses in writing. The agency isn't bound to do anything except read and reply to each NPRM response, again by publication in *The Federal Register*. Existing federal regulation(s) is/are damnably difficult to change, although any citizen can write a proposal for a change and submit it to the appropriate regulatory agency, whereupon said agency must deal with it through the NPRM route.

Following the rules and doing this is difficult and time-consuming. You almost have to be nuts to try it. I've done it (a) to keep general aviation from being regulated out of the sky, (b) to keep the budding private space launch vehicle industry from being so overregulated that it couldn't even get started, and (c) to prevent a million model rocketeers from having to get clearances, waivers, permits, and licenses from the Federal Aviation Administration and the Office of Commercial Space Transportation.

This is an area of political science that normally isn't discussed except at the graduate level. Regulatory law, jurisprudence, and practices are bizarre and byzantine. But, oh, are they fun to participate in! And they are about the only mechanism available to a citizen to keep the federal government from doing its usual thing: overreacting to something that's already happened.

Here's a perfect and recent example of regulatory overreaction:

On August 31, 1986, an Aeromexico DC-9 airliner and a Piper Archer private aircraft collided over Cerritos, California. At the time of this writing, the National Transportation Safety Board (NTSB) hadn't released its final report. But, whatever the findings of the NTSB, the consequences are highly predictable and already having an impact.

In the past 20 years, there have been five fatal midair collisions between air-

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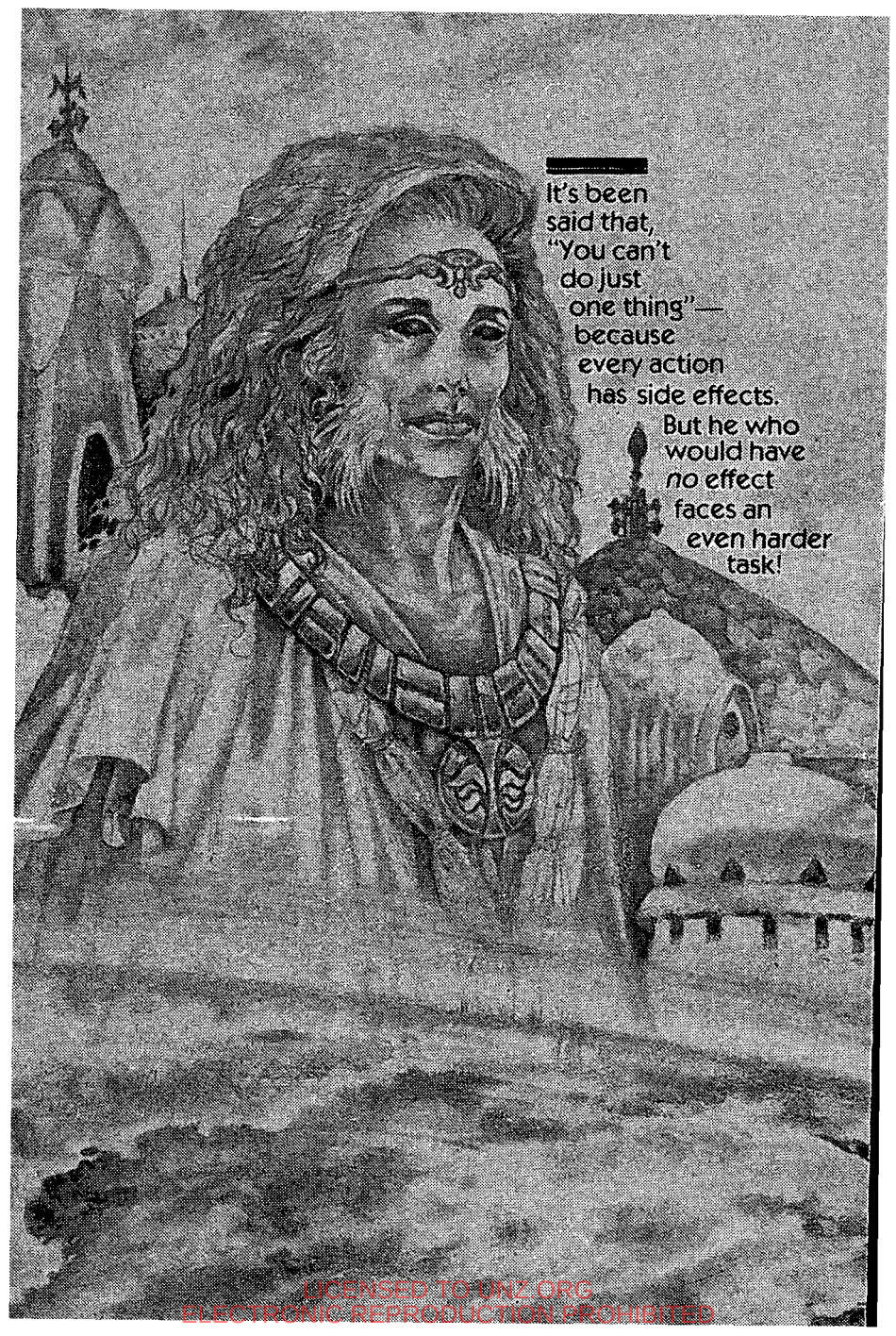
It's been said that, "You can't do just one thing"— because every action has side effects.
But he who would have *no* effect faces an even harder task!

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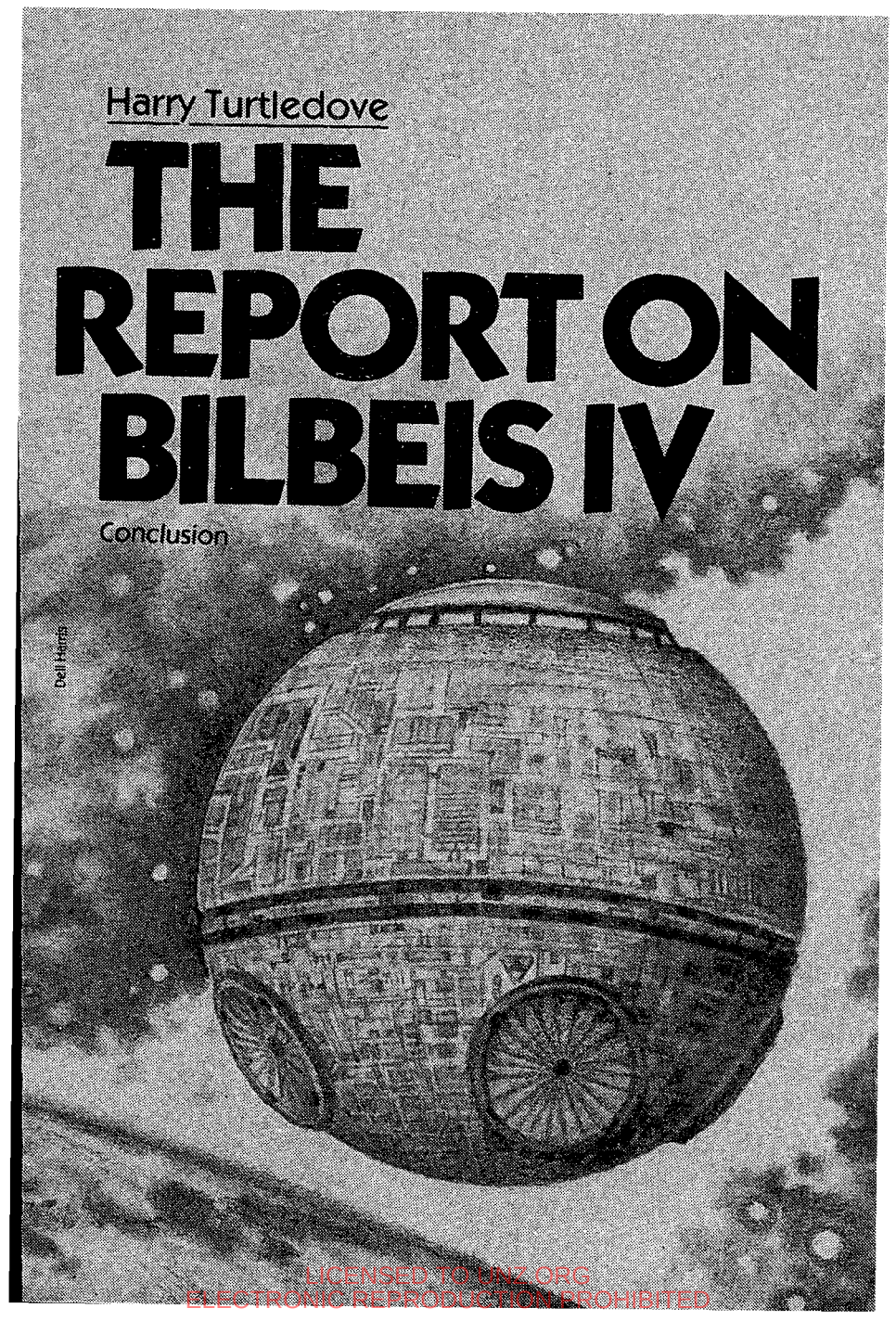
Harry Turtledove

THE REPORT ON BILBEIS IV

Conclusion



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SYNOPSIS

To anthropology grad student Stavros Monemvasios, the report on Bilbeis IV was a seminar project. Only after his professor handed it to him did he realize how important it was: it showed how Survey Service interference 1,500 years before on Bilbeis IV had had far-reaching effects. Queen Sabium, whose cancer the Service personnel had cured then, was still very much alive now, and worshiped on two continents as the undying goddess.

To Survey Service Paulina Koch, the report on Bilbeis IV was a disaster. The Purists—the faction in the Federacy that opposed Service work on pretechnological worlds—would use it to beat the Service over the head. The Chairman and her security chief Roupen Hovannis erased the report... and arranged to erase Stavros's professor, when they found he had accessed it before it disappeared.

A newsnet reporter named Van Shui Pong, though, was curious about why professor Fogelman's entire data storage system had been trashed in what otherwise seemed an ordinary break-in killing. Stavros showed him the report. Trying to find out if it was genuine, Van Shui Pong discovered there was no longer any record of it—but also confirmed, in a different data base, that the Survey Service ship Jêng Ho, *which filed the report, had arrived on Topanga, a Federacy planet, eighteen days before. He broke the story.*

Paulina Koch denied everything in a news conference and before the Assembly. Stavros and a girl in his seminar, Andrea Dubois, with whom he had become first friend and then lover, urged Van Shui Pong to get hold of the Jêng Ho's *crew directly. He tried, only to learn they were all missing and presumed dead in the crash of a tour ship, the* Clark County. *That gave him cold feet; he bailed out of the investigation.*

Stavros and Andrea pressed on without him. The same killer who had dealt with Stavros's professor did away with Andrea. Stavros found her dead in his dorm room. He did not go to the police; he feared they would blame him. Instead, one step ahead of the killer, he went to the spaceport. He only survived because Paulina Koch, her precious appropriation safe now that the scandal seemed to have blown over, decided to tie up a loose end by rubbing out the assassin who knew too much: the fellow was removed just as he spotted Stavros, who took off on the Arminius, *bound for Topanga, in the hope that someone on the* Jêng Ho *had talked to someone there or left information behind.*

Magda Kodaly, the Jêng Ho's *anthropologist, did not go on the* Clark County *because she could not stand Atanasio Pedroza, who was handling the tour arrangements. The biologist wanted her, and had booked the two of them into compartments with a connecting door. She gave her ticket to an old friend, Marie Roux, who happened to be on Topanga, and also gave Marie her spare credit card to use as confirming ID: they were both redheads, and people thought they looked alike.*

Magda had submitted the report on Bilbeis IV to Survey Service Central, and wondered why it was not creating explosions. Harassing the local Survey Service people on Topanga it seemed that Central never got the document. She resubmitted, then went back to work on a monograph she was writing about queen Sabium. When she checked again, a couple of weeks later, she found the report on Bilbeis IV once more had not been received.

Annoyed and frustrated, she went back to her apartment and turned on the news, which she rarely did on Topanga. That was when she learned the Clark

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County had crashed. Her own credit card had been pulled from the wreckage; she was officially as dead as the rest of the Jêng Ho's crew. Since Marie's card did not turn up, she also had trouble getting her credit restored.

She had to force herself to go back to the Survey Service office to resubmit the report on Bilbeis IV one more time, and only did so as a monument to the crew of the Jêng Ho. The third submission alerted Paulina Koch and Roupen Hovannis that someone from the Jêng Ho had survived. Once more, the Chairman deleted the report as soon as it arrived—it was too dangerous to leave in public files, especially since now it would not only expose interference on Bilbeis IV but also the Service's concealment campaign afterwards.

When Magda learned the third submission had failed too, she decided to take the report on Bilbeis IV to the Noninterference Foundation, a watchdog group. A Survey Service clerk talked her into resubmitting one more time instead. A scruffy stranger on the shuttle to the Service office seemed to know her, and followed her in. It was Stavros Monemvasios. He stopped her from sending the report after all. After they compared notes with mounting horror, they did go to the Noninterference Foundation's Topanga office. The Foundation people eagerly received the news of the Service's foul-up. It was an uneasy alliance, though. The Foundation was too close to the Purists for its folk to be comfortable with Magda and Stavros, or vice versa.

On the way back from the Noninterference Foundation office, Magda discovered an explosion had leveled her apartment complex. The why of that seemed only too obvious. As Stavros said, "You're not paranoid when they're really after you."

Paulina Koch continued to deny Survey Service wrongdoing, but her position began to erode as Magda reestablished her bona fides. The Prime Minister of the Federacy, Amadeo Croce, urged (or rather, insisted on) a reinvestigation of Bilbeis IV to ascertain the facts, and a crew made up not only of Survey Service personnel but also of those chosen by the Noninterference Foundation. Under pressure, the Chairman had to yield.

On a talk show, Magda got into a flaming row with Peter O'Brien, the Noninterference Foundation's Topanga chief: he was close to being an out-and-out Purist, and she had no intention of pretending she agreed with everything he had to say. Seething, she went to Stavros's apartment for booze, and sympathy. The flap over Survey Service Central's suppression of the report on Bilbeis IV had pushed the immortal queen Sabium into the background, even in Magda's mind, and Sabium was too remarkable for that. Unlike any other intelligent being, she had been growing into herself for more than half the life of the Federacy, and leading her people with her, right to the edge of a scientific revolution.

Magda ended up sharing Stavros's bed, more because they were both seeking comfort in a precarious situation than for any other reason. Afterwards, he turned gloomy: it reminded him too much of the way he and Andrea had made love the first time. Magda hoped he would still be interested in her. Life would be less lonely that way.

O'Brien tried to have his revenge on the two of them by excluding them from the new expedition to Bilbeis IV. By threatening adverse publicity, they forced him to back down. "You win," he growled after conferring offworld, and hung up on them.

After speeches by assorted dignitaries, the Hanno took off for Bilbeis IV. Magda and Stavros were both on it, in adjoining cubicles. The captain of the joint Survey Service-Noninterference Foundation crew was Roupen Hovannis.

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"The disputed orchards, I find, do in law lie under the jurisdiction of the town of Khonsu. Yet because the representative of Shirik has shown that its townspeople have used these orchards for two generations without protest from Khonsu till now, they may still harvest up to one hundred *tal*s of fruit per year there at no cost to themselves. Above that, they shall pay Khonsu at the market rate."

The spokesmen (actually, one was a woman) of the two towns bowed low before the glittering throne. "We thank the eternal goddess," they intoned. The words were ritual, but the goddess heard no great dissatisfaction in them. She had been able to give both sides something, which went a long way toward stifling resentment.

The claimants bowed again, and walked out of the audience chamber side by side. No, there would be no further trouble there for a man's lifetime or two, the goddess thought. She turned to her majordomo. "They were the last for today?"

"Yes, goddess." Though the priest had served in the Holy City since before his beard sprouted, his voice was as full of awe as those of the petitioners from distant Khonsu and Shirik, who were seeing the goddess for the first and almost surely last time in their lives. He asked, "Will you return to your chambers now?"

"Not just yet, Bagadat. I will sit for a moment first." The goddess leaned back, smoothed a wrinkle in the fine white fabric of her robe. Suddenly the weight of the gold circlet on her brow seemed heavy and oppressive, though she could not remember the last time she had noticed it . . . perhaps not even since the days when she had been known as Sabium.

She needed all the discipline a millenium and a half had granted to keep from her face the complex concerns that thought evoked. The last meeting with the representatives of the higher gods, the ones who had given her eternal life, had been oddly inconclusive. The bronze-haired woman and bald-crowned man —strange, alien features only accented by their brownish-pink skins—had seldom been far from her mind in the two years since they mysteriously appeared and as mysteriously vanished.

What had puzzled her ever since was their youth and ignorance. Gods lived forever; even she, who had become divine only by grace of more powerful deities, enjoyed that boon. Surely the same had to be true of divine messengers as well. Yet these claimed no more than a man's span of years, and by every subtle sign she had learned were speaking the truth.

Moreover, she was convinced her own immortality had surprised and shocked them, though they knew of the events that had created it. She did not have many mysteries in her life; people had become transparent to her after so many years of observing them, guiding them. She worried away at the riddle of the messengers as at a piece of meat stuck between the teeth.

And as with a piece of meat, she was confident the mystery eventually would yield. The patience to wait for the fullness of time before acting was no small part of what had won Sabium dominion over most of her continent and a good portion of the smaller one to the east.

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Her rivals, being mere mortals, always moved too soon.

Behind her mask of calm, a wry smile stirred. Now she had no choice but to wait. She accepted that with the same resolution she had used long ago to face her own death. She rose from the throne. "I'm sorry, Bagadat; I've changed my mind. You may escort me after all."

The majordomo bowed very low. "Of course, goddess."

Paulina Koch ruled an empire older and vaster than Sabium's. Indeed, were it not for the Survey Service, Sabium's empire would never have come into being. Bureaucracies, too, have something of immortality about them, and distill wisdom from the years. Had Paulina Koch been a person who framed mottoes and hung them on her wall, pride of place would have gone to the one that read, WHEN IN DOUBT, DO NOTHING.

The Chairman was not that sort of person. She loathed display in any form; all she wanted was to do her job, do it well, and be left alone. Most of the time she got her wish. Even after the mess about Bilbeis IV blew up, she had guided the Service's appropriation through a hostile Assembly with her usual sharp skill.

But waiting would not always serve, and while the Survey Service might go on forever, Paulina Koch knew only too well her own tenure as Chairman—to say nothing of her freedom—would not last ten minutes past final confirmation of just how she had covered her tracks. It behooved her, then, to make sure those data stayed buried.

Cornelia Toger's report, which she had just reviewed, was no threat. The Internal Affairs Director hadn't been able to find anything wrong at Survey Service Central. Paulina Koch had not expected her to; the only reason she headed the internal investigation was her inability to see past her nose.

The Chairman almost laughed at her suggestion that the problem really lay on Topanga. Then she stopped, thoughtful. Pinning a piece of the blame there might not be a bad idea after all.

Getting Roupen Hovannis offplanet was a more certain insurance policy, though, she thought. For one thing, he would help keep a lid on this new investigation of Bilbeis IV. Self-interest was a perfect lever there: Hovannis knew his neck was on the line too.

For another, now that he was gone, Paulina Koch had a better chance of teasing out of the computer whatever incriminating evidence he had on her. She knew it was in the system. Hovannis would have been a fool not to keep that kind of file, and Paulina Koch tolerated no fools in the Survey Service.

But data processing had been the key to her own rapid rise through the ranks. Hovannis was very good at hiding information. With no false modesty, she thought she was better at digging it out.

The trouble was, she had so much to go through. No one, and no army either, could hope to keep up with all the information the Federacy generated. And as External Affairs Director, Hovannis had access to almost all the veiling techniques the Survey Service had ever had to devise. If he wanted to conceal dirt in 600-year-old committee meeting minutes against future need, he could

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change those documents without leaving any sign that their ancient obscurity had been disturbed.

Or so he thought. Still, there were ways. Like any safety-conscious administrator, Paulina Koch held a few tricks in reserve about which her subordinates knew nothing. Some, unfortunately, left traces behind—otherwise the Chairman would have been using them all along, instead of having to wait until Hovannis was away from the scene.

Until she began her search project, she had had only an intellectual feel for the sheer size of the bureau she ran. Watching the computer spin its metaphorical wheels as it ground through enormous chaffheaps of data, though, gave her an emotional grasp as well, one she would just as soon not have had. Someone else might have given way to despair—what she was looking for might be *anyplace*.

Paulina Koch did not give way. In what free time she had from the day-to-day problems of running the Service, she refined a couple of search routines to make them harder to detect and, more important, faster.

Unlike Sabium, she knew she did not have all the time she needed.

Magda slammed her hand down on the table in disgust. "I don't know why I bother talking to you, Pierre," she snapped. "You're only using half the data we have, and the less important half, too."

Pierre Bochy gestured defensively. "You will forgive me, but I see no reason not to rely on language tapes, records of diet and dress, and the like. But I find a woman more than half as old as the Federacy much harder to take seriously."

"Survey Service hack," Stavros said, flipping his head back in a way that combined contempt and an effort to get a lock of hair away from his eyes.

Bochy rose, bowed with grace surprising in a man so portly, and stalked out of the small study compartment.

Magda sighed. "That's not going to help, Stavros." Ever since boarding the *Hanno*, she had worked to keep her temper under control. The *Hanno* was tense enough already. The Survey Service personnel looked on their counterparts from the Noninterference Foundation as a pack of meddling amateurs along only because of political pressure, while the Foundation contingent viewed the Survey Service team as at best hidebound button-pushers and at worst as wanton despoilers and murderers. No one seemed shy about saying so, either.

As Bilbeis IV neared, Magda found her good intentions fraying. Though she and Stavros were nominally part of the group from the Noninterference Foundation, they had few friends there. Most of the Foundation people were Purists, and mistrusted anyone who was not all for destroying the Survey Service. Magda's years with the Service only made her doubly suspicious to them.

Yet to the Survey Service staffers, she was a traitor for having gone over to the Foundation and, though no one would say so out loud, for airing dirty Service laundry in public. That bothered her less than she'd expected, and she took a long time to figure out why.

Stavros's rude crack summed it up as well as anything. The Survey Service

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people on the *Hanno* were distinctly second-rate. If Magda had to guess, she would have said they were chosen much more for adherence to accepted views than for brilliance. Bochy was a case in point. He was competent enough, but his mind moved in preselected tracks.

Caught in her reverie, Magda did not notice the measuring stare Stavros sent toward her. Though they were allies in this, though she had given him no reason for it, he also worried about her coming from the Survey Service, worried that in the end her quarrel with the Service turned more on information suppressed than on lives suppressed.

He knew that was a paranoid thought; Magda had lost more people close to her than he had. But seeing the whole Service as an enemy, as he did, sometimes made him have trouble separating her from it. And thinking like a paranoid had kept him alive more than once lately.

Enough, he told himself firmly; he knew he was vaporing like a fool. Next he'd start hearing voices and they'd fill him so full of happy pills he wouldn't care what day of the week it was, let alone anything else.

He touched Magda's arm, wanting to make amends the best way he knew how for thinking ill of her, even if she had no idea he'd done so. "Shall we go back to my cubicle?"

She glanced at the clock on the wall. "I'm supposed to be here another fifteen minutes, but why not?" she said sourly. "I don't know why they even bothered scheduling these briefing sessions in the first place."

"Well, thanks to their killing off everyone else who's ever been to Bilbeis IV, your opinions do have a certain value."

She laughed, but the mirth washed out before she was through. "You're getting as cynical as I am. Are you sure you want me to come along with you?"

"Yes." Stavros realized they were lovers more on account of the events that had thrown them together than for any solider reason, but the pleasure and moments of forgetfulness they drew were no less desirable because of that.

"All right. Like I said, no one pays any attention to me in here anyway. The Service people have the chunk that they can handle, and the Foundation people have theirs, and nobody wants to look any farther. Screw 'em all."

"No thank you," Stavros declared solemnly.

This time, Magda's laugh stayed happy. She took Stavros's hand, pulled him up from his seat. "Come on. Doesn't it make you feel like you're ditching a class?"

"I can't think of a better incentive," he said, smelling the clean fresh scent of Magda's hair. But, though he bantered with her as they walked the *Hanno*'s corridors, some of his happiness had leached out of him. Once or twice, back on Hyperion, he had cut class to sport with Andrea. . . . who would still be alive, had he not got that copy of the report on Bilbeis IV and recognized it for what it was.

His mood darkened further when he and Magda turned a corner and almost ran into Roupen Hovannis. The captain of the *Hanno* scowled his dark-browed scowl at them, then pointedly checked his watch. "Why aren't you at your assigned station?" he growled at Magda.

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It was only the second or third time he had spoken to her since the flight began. Stavros, as usual, he ignored altogether.

That suited Stavros fine. He distrusted Hovannis on general principles, as being a creature of Paulina Koch's. But even without connection to the Chairman, the captain would have frightened him. There was no give anywhere to Hovannis. He even walked with his hard, stocky body leaning slightly forward, as if to bull obstructions out of his path.

No attitude could have been better calculated to get Magda's back up. She retorted, "Anyone who wants me that badly can call me in my cubicle. Sitting in that study chamber wastes its space and my time."

"I'll log your disobedience," Hovannis said stonily.

"Go ahead. While you're at it, log that a grand total of three people showed up in the last week, and that none of them had any idea what questions to ask."

Shaking his head, Hovannis stamped away. Magda glared at his broad back, then surprised Stavros by chuckling under her breath. He said, "As far as I can see, that one's about as funny as a funeral."

"Nowhere near. I was just thinking, good luck to anybody who tries to call me in my cubicle, seeing as I'll be in yours."

Suddenly that prospect looked very good to Stavros again. "Let's go, then."

Afterwards, Magda said with malicious glee, "We'll be landing in a couple of days. Then all the people who stayed away will wish they hadn't."

The phone chimed. Stavros got out of bed to pick it up, remarking, "Usually that happens in the middle of things." He answered the call, then, abruptly quite serious, turned to Magda. "It's for you: the Foundation's comparative theologian. She was surprised when she got me—thought she was punching for your cubicle."

"Then how in blazes did her call end up here? Our extensions aren't even close to being—" Magda paused as her brain caught up with her mouth. "Hovannis," she said slowly.

Her brows knit in a frown. She'd been thinking of the captain as someone with more muscle than brains. Now she saw that was judging him only by the impression his appearance gave. He had to have been the one who diddled with the call-forwarding system; undoubtedly he *had* been hoping she and Stavros would get interrupted.

She took the call, thinking that Hovannis was smarter than he seemed. That was worth remembering. He also had a mean streak in him. That was worth remembering too.

As she did every so often, the goddess sifted through reports of prodigies that came to the Holy City. She did not believe, as she once had, that such things foretold the future; she had seen too much future unfold for that. But such fears and hopes still lurked in the hearts of her people. A soothing proclamation every so often, when something particularly strange happened, did no harm and some good.

Strange to mortals, at any rate, the goddess who had been Sabium amended mentally. After fifteen hundred years, the cries of alarm over misshapen ani-

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mals and men and over such perfectly predictable matters as eclipses and transits all sounded very much alike. Sometimes she thought she would reward the reporter of a new kind of prodigy in the same way she did inventors. The drain on the treasury would be much smaller, that was certain.

Having thought that—not for the first time, nor for the hundredth—the goddess found herself only a short while later tugging in bemusement at the fine down on her cheeks. Several herders northwest of the Holy City had reported a great shape in the night sky, visible only because it blotted stars from view as it moved.

At first she thought a group of drovers had gone too deep into the alepot. Then she noted that the reports had been turned in to priests in villages a fair distance apart. Those from villages further east noted the prodigy in the western sky, while the westerly ones claimed it was in the east.

She tugged again, searching for a memory. Something of the same sort had come to her notice a couple of years before. She'd paid scant attention then, being still in a turmoil over the visit of the divine messengers. She stiffened. Could there be a connection? She was positive she'd seen nothing else like these messages, not in all her time on the throne.

She wondered if, around the time she became immortal, similar news had come to the town that had been Helmand and was now the Holy City. She did not recall it offhand, but that meant little, given the span of years involved. She summoned Bagadat, told him to have a search made of the most ancient records. He hurried away, puzzled but as always obedient.

She was disappointed when no such report turned up, but not overwhelmingly so. Record keeping had been catch as catch can in the early times; not only that, but in those days, with far fewer people about, drovers did not have to take their flocks so far into the northern desert. If something obscured the stars with no one there to see it, how would she ever find out?

She summoned Bagadat again. "Send word to the priests of Charsadda, Pauzatish, Izala—" She named several more northern hamlets; Bagadat's stylus scratched across wax as he scribbled notes. "Tell them visitors such as we last had two years gone by may soon come among us again, and bid them send on to me any strangers they reckon may be such."

"Yes, goddess." Bagadat's face was worried. He had never seen his divine mistress disturbed until the strangely colored foreigners appeared before her; he would have given much never to see her so again. All across the world, people loved and worshiped the goddess, but he was one of the lucky handful privileged to serve her person. He had never thought he might want more distance from her so he would not need to know she could be troubled.

Sabium (she thought of herself more that way since the divine messengers had reappeared than she had for centuries) sensed that and spoke quickly to reassure her chamberlain. "Have no fear, Bagadat. This meeting will find me better prepared than the last, I promise you."

Bagadat dipped his head in acquies-

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cence. "Of course, goddess. I shall ready the despatches at once." His back was straight as he left Sabium's presence; at bottom, like all those who worshiped her, he had confidence in her ability to meet any challenge. Over the generations, she had given them every reason for that confidence.

She felt less of it herself. Coming face to face with those who knew of her most ancient past had reminded her of how vulnerable she once was. Against her own folk, that was true no longer. The gods she alone recalled, though, did what they would with mortals, and could grant like powers to their messengers.

She was no longer a mortal, but she did not know where the balance of power lay. She would take what precautions she could.

Roupen Hovannis drained yet another cup of coffee. His eyelids still wanted to sag. He muttered something under his breath, dry-swallowed a wakeup pill, leaned back in his chair until it kicked in, then went back to studying.

He had thought the outward trip in the *Hanno* would be like a vacation: after the byzantine machinations of running the Service's External Affairs Bureau, keeping track of a couple of dozen scientists had to be a piece of cake.

That much, at least, was true. But it only dawned on him gradually that he might have to do more than keep track of them once they got to Bilbeis IV: With things as they were down there, he might have to get his feet muddy himself. And if he was going to do that, he had to conform as closely as he could to all the niggling Survey Service rules, or else blow the mission by bringing even the tame Service people down on his head. He had already learned more about the local unwashed barbarians and their language of clicks, coughs, and grunts than he ever wanted to know. All the same, he kept at it; as a security man, he had long ago found out you could never tell beforehand which piece of data was the important one.

He had another reason, too. The more people saw him operating inside the rules, the less it would occur to them that he could step outside any time he chose.

The desert air seared the inside of Stavros's nostrils. He felt his eyeballs start to dry out. He blinked. In moments, the savage sun baked the moisture away again. Sweat sprang from every pore of his body. "Whew!" he said, wiping his forehead with the back of his hand. "I've been shipboard too long; I'm not used to real weather any more."

"You have to be born to this to be used to it," Magda answered. "Even then, the locals like to sleep for a couple of hours around noon." She dabbed at her face with a kerchief, looked down to examine the cloth. "This bloody makeup had better be as sweatproof as they promised; it's going to get a workout here. Not only that, my false cheek-whiskers itch like hell. How can you stand that beard of yours?"

"It's not glued on, which helps, I suppose. I'm not used to the green tint in it, though." Nor was Stavros used to the grayish-pink dye on his skin and Magda's, though he trusted it further than she did: if it had not come off in

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the shower, it would probably survive Bilbeis IV. He found her fuzzy cheeks more disconcerting—the last hairy face he had kissed had been his grandfather's.

The natives were humanoid enough that under most circumstances the crew of the *Hanno* could have gone without disguise, passing themselves off as travelers from a distant land. But nothing was normal about Bilbeis IV. With Sabium's priesthood alert to bring Terran-type humans to their goddess, more than usual discretion was called for. Even Hovannis wore makeup, though nothing could make his dour, craggy features much resemble anything Bilbeis IV produced.

For the moment, Stavros was content merely to forget the captain, rather than worrying about him as he usually did. Doing fieldwork for the first time, getting sand in his boots from a world outside the Federacy, was exciting enough to make him unusually charitable.

"I know what you mean," Magda nodded when he said that out loud. "I was so thrilled to be loose on my first planet that I almost killed myself out of sheer stupidity. I swaggered into a tavern and ordered the wrong kind of drink—like an idiot, I'd managed to forget the locals got high on methanol as well as ethanol. I'm just lucky the veteran I was with stumbled against me accidentally on purpose and knocked the mug out of my hand before I swallowed any."

That thrill never wore off, not completely, not if you were meant to be a Survey Service person. But experience tempered it for Magda. So did caution, here. No matter how big a technological advantage she had on Sabium, she did not feel safe matching wits with the goddess. Sabium's edge in wisdom, Magda was uncomfortably aware, was just as great.

She said, "I only hope we're far enough into the desert to let us practice being native without any real natives spotting us. If the locals see people walking into and out of a small mesa, then we might as well not have bothered turning on the *Hanno*'s camouflage screens."

Stavros glanced back at the ship. It looked like an outcropping of the yellow sandstone that underlay the dunes and emaciated plants hereabouts. He said, "I think I trust the sensors that far."

"They're only as good as the people monitoring them." Magda rubbed a couple of new bites; whatever the sensors managed to pick up, they weren't worth a damn against flying pests. She scrubbed at her dyed skin with a wet finger. When she stayed gray-pink, she grunted in dubious satisfaction. "I am glad this stuff has a sunscreen in it; otherwise I'd be about ready to take off this oven and eat."

Being darker under the makeup, Stavros was less concerned about sunburn. Still, the feeling of being stuck in a blast furnace had begun to outweigh his delight at working on a primitive planet. "I wouldn't mind icewater," he admitted.

"Or cold beer," Magda said. "Enjoy it while you can. Beer isn't the same at blood temperature." The memory of six months of such beer on the way to the Holy City made her shudder.

She gave a luxurious sigh at returning to cool, conditioned air, then sneezed

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several times in a row. She wiped her nose and scowled. She didn't like to be reminded of any little drawbacks of technology, not when she had just been counting on it as her big edge on Sabium.

As usual, an argument was going in the lounge. Pierre Bochy, Magda thought, did not look good made up as a native of Bilbeis IV, not even in Survey Service coveralls. The dye turned his plump features the color of stewed pork. Which was also what the anthropologist was using for brains, Magda observed; he was blithering on again about how the local matriarchy was really no different from a good many others. "Take the Shadofa culture on Wasf II, for instance: quite similar in a large number of their beliefs and customs."

"How about historical development?" Magda broke in with a sweet, carnivorous smile. "The Shadofa hadn't made a new invention in two thousand years, never ruled more than part of one small island, and were losing ground there the last time the Service visited. Besides which, you'll forgive me for reminding you, their goddess isn't real."

"Not relevant," Bochy said blandly. "They believe in Acca without reservation; she has the same force in their lives that the eternal goddess does here." He would not speak Sabium's name.

His effrontery left Magda momentarily speechless, something not easy to accomplish. But Justin Olmstead, his opposite number from the Noninterference Foundation, returned to the attack he had been making when Magda came into the lounge. "I've urged you before, Pierre, don't refuse to face facts merely because you are a member of the organization responsible for the problem."

Olmstead's voice was deep, smooth, and mellow, his gray hair (now dyed gray-blue) perfectly in place. Even made up as he was, he looked as though he would be more in place in front of a holo camera than in the field. From what Magda had seen of his professional work, in front of a camera was where he belonged. He was an excellent popularizer, though. More people knew his floppies and books than those of any three dozen serious researchers.

The Foundation had insisted on adding him to its contingent along with Magda and Stavros. Magda grinned to herself; she was getting to enjoy being considered unreliable. Still, she had to admit Olmstead was a shrewd choice. He would make a good talking head once the *Hanno* got back to the Federacy, always assuming he didn't get himself killed trying to be an anthropologist instead of just looking like one.

He did not overawe Bochy, however. "What are the facts?" The Survey Service man shrugged. "At the moment, they are in dispute; otherwise we would not be here. Have you so made up your mind that it is closed to anything new we may find?" Bochy was tenacious, Magda thought as she saw Olmstead frown; she would have reckoned him pigheaded had he come back at her that way.

Stavros broke in harshly, "How many people have died to keep these non-facts of yours from ever coming to light? Isn't it a fact that your precious Service has

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been busy trying to bury the truth and the people who know it?''

Bochy shrugged again. ''I know nothing of that. I was on a pre-Federacy world myself when the *Jêng Ho* was last here.''

''Yes, I understand that,'' Stavros said, and surprised Magda by adding, ''I apologize.'' After a moment he went on, ''But doesn't it matter to you whether that's so?''

''Of course it matters to me. As I said, though, I had nothing to do with it.'' Bochy seemed to think he had made a complete answer. He turned away from Stavros; he was as eager to claw pieces out of the rich and famous Olmstead as the latter was to attack the minion of the corrupt Service. Stavros doubted that either saw the other as a human being. He wondered if Bochy saw anyone as a human being.

When, later, he said that to Magda, she shook her head. ''I'm sure he's normal enough with his family and friends. But if he didn't see a Service screwup with his own eyes, it's not real for him. There was some phrase I ran across in an ancient lit class that puzzled me for years, until I joined the Service and saw the thing it was pointing at. Bochy fits the type.''

The ancient literature Stavros had read was mostly classical Greek. Doubting that Sophokles had been talking about Pierre Bochy, he raised a questioning eyebrow.

'' 'Good German,' '' Magda told him.

The investigator was very young, very neat, and very self-assured. ''Surely, Madam Chairman, you remember more about the day the report on Bilbeis IV reached Survey Service Central than is yet on the record,'' she said. ''That was FSY 2687:139, if the precise date will help you.''

''I doubt it,'' Paulina Koch said indifferently. The investigator had done her homework if she could pull the date out of the air like that, but the Chairman refused to let such a parlor trick rattle her. She went on, ''If I'd thought the day somehow special, perhaps I would have taken more care to fix it in my mind. All I can say for certain is that I was busy. I usually am. For details, you will have to refer to the printout of my log I have submitted.''

The investigator nodded, fought back a sigh. Sitting across the table in her trademark gray, Paulina Koch remained sweatless and elusive. She was taking exactly the right line, instead of falling into the trap that would have snared so many detail-oriented people: that of recalling far too much about a day supposedly ordinary.

No one, though, the investigator told herself firmly, was invulnerable. She tried to act as if she believed it. ''About that printout, and others we have received from your staff,'' she resumed. ''Analysis shows the paper on which they were printed is from a lot procured from a new supplier, one not yet sending shipments to Central on the dates the documents were produced.''

''Let me check,'' the Chairman said. She tapped at the keyboard of the terminal beside her. ''Ah, here we are.''

The investigator came round the table to see. There on the screen was a requisition ordering a small trial shipment of the new paper. It showed the blasted

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stuff had been in use at Central on the days in question.

"Is there anything more?" the Chairman asked politely.

The investigator tried a different set of questions. Paulina Koch relaxed, as much as she let herself relax these days. This line was not dangerous. The last one had been. Had she not happened to hold a couple of memos—an old one and a new one—side by side, she never would have noticed they were printed on sheets of slightly different color, and never thought to insert that false requisition into the files. It would not stand up to close scrutiny, of course, but with luck it would not get any. Just having it in place should do the job.

That was a loose end tied up. She wondered how many were still around, lying there for her to trip over. Enough earnest young hatchetpeople like the one in front of her were out looking for them. She knew they were trying to penetrate her own private computer records, but so far—she thought—they'd had no luck at that. She had enough false trails there to bewilder the most resolute snoop.

She knew, though, that her precautions were not what kept her safe, not any more. The most important thing in her favor was a collective will to disbelieve that any bureaucracy could get out of hand to the extent of plotting murder. Concealment of faults, yes; any agency would do that without thinking twice. But such determined mayhem—

She could hardly blame the investigative team. Not so long ago, she would not have believed what she had done and ordered, either.

The woman pestering her gradually realized her latest line of questions was going nowhere. Pauline Koch almost felt tempted to laugh. Being asked about things of which she was actually innocent made a pleasant novelty.

At last the investigator said, "Thank you for your time," and left. Paulina Koch went back to her office. Before she did anything there, she ran a scanner over herself to make sure the investigator hadn't managed to plant a bug on her. That was no baseless worry; it had happened more than once. She was clean this time, though.

Once satisfied of that, she rushed through the Service business that had piled up on her desk while she was away. She felt guilty at giving it such short shrift, but no help for it now. If she was going to go on guiding the Service, she had more important things to tend to.

The most important of those was penetrating Roupen Hovannis's files. She knew where they were now, or thought she did, but she was having no more luck accessing them than the outside investigators were with hers. Sure enough, he had his own undocumented entry codes.

Under other circumstances, Paulina Koch thought, she would have fired him for that.

The meeting broke up. Magda's head ached. She stayed in the conference chamber after most people had filed out. "I need a drink," she declared to anyone who would listen, which meant, in essence, to Stavros. She punched the refreshment panel, ordered anise-flavored vodka over ice.

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He smiled when he saw the cloudy white liquid. "I'm corrupting you."

"Don't use that word, not when this whole mission smells like dead fish." Magda tossed down the drink at a gulp, threw the glass in a wastebasket. Being plastic, it denied her the satisfaction of shattering. She snarled and began ticking off points on her fingers. "Geology? The *Jêng Ho* did a first-rate job; everybody says so. Linguistics? Fine. Architecture? No problems. Biology? Good. There I won't argue; Atanasio Pedroza, may he rest in peace, was a bastard, but a damned capable bastard. Then they get round to the anthro stuff, and all of a sudden dead fish is perfume by comparison."

"That's not quite true." Stavros knew Magda required careful handling when she was in one of these fits of temper. "They're ready enough to accept anything that doesn't touch too closely on Sabium."

"That doesn't leave bloody much, not on Bilbeis IV." She somehow contrived to look plump as she did a wicked imitation of Pierre Bochy, intoning, " 'Further study and examination of this anomaly will be required before a final determination can be completed.' What really frosts me is Olmstead agreeing with him. Those two can't agree on which direction the sun comes up from, and now this." She felt—and sounded—betrayed.

Thinking that, Stavros got a handle on what had perplexed him as much as her. "If Olmstead agrees your data are valid, then what's he doing here? Confirming a Survey Service report? How much good would that do his career?"

Magda slowly nodded as she saw where Stavros was going. "Olmstead'd sooner be castrated with a microtome than admit the Service can do anything right. Whereas if *he* were to make the astounding discovery of an immortal goddess—" She let her voice trail away.

"With the tapes and books he churns out, he'd live fat for the rest of his life," Stavros finished for her.

"So he would. Yes, that fits very well." Magda nodded again. "And so off we'll all go, on pilgrimage to Canterbury."

"To where?"

"Never mind; more clutter from that class of mine. I must have it on the brain. I even thought about majoring in ancient lit once or twice, till I realized I'd have to teach for a living and that I liked fieldwork better." With the almost-ouzo warm in her, Magda tried to be optimistic. "One more band of pilgrims shouldn't be conspicuous, not with us in disguise and not with the number of people who go to the Holy City every year. It shouldn't be," she repeated, and tried to make herself believe it.

The goddess frowned, wondering whether the orders she'd passed to her priesthood had been too vague. She was not often guilty of overreacting, not after gaining perspective for so many years, but even she had scant experience to guide her when it came to dealing with the strange beings who had made her what she was.

Winnowing grain from chaff was the problem. Now more alert than ever to the presence of unusual strangers, some priests were sending her reports of anyone they spied who was even slightly

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out of the ordinary. Sabium had not realized so many of her subjects possessed large moles, lacked a digit or two, or had curiously stained teeth. A glance sufficed to consign most such sightings to the rubbish heap.

Some were harder to evaluate; even with instructions to send information as detailed as possible, all too many priests were maddeningly unclear. That problem seemed worse in the first messages now reaching her from the eastern continent, where her rule was newer and less firm. Before long, she decided to ignore news from the eastern land. Divine messengers, she reasoned, could come closer than that.

Had she not just reached that conclusion, she might have paid scant attention to another of the endless stream of reports. The people of whom it spoke, after all, had gray-pink skins and greenish or bluish hair like everyone else, not the exotic coloration of previous visitors. But they had arrived on foot at Mawsil, only a day's journey west of the Holy City, and no other pilgrims there remembered seeing them at any earlier stops in the Margush valley.

Sabium made a note to commend the priest who had written her; this woman, unlike so many others, had her wits about her. She had not just listened to travelers' gossip. Before sending word to the goddess, she had checked with the priesthood back in Rai, the town just west of Mawsil. On learning no one there recalled this new band of pilgrims, she observed them more closely.

They spoke with an odd accent—and the priest emphasized she was familiar with most of the ways the dominant tongue of Sabium's realm could be flavored. More interesting still, they seemed to have more money than they knew what to do with. Yet they were walking, not riding on beastback or traveling in carriages or sedan chairs. They also seemed, the priest wrote, curiously unworn for people who must have come from far away.

The more Sabium studied the parchment, the more it intrigued her, especially when she remembered that the moving patch which obscured the stars had been seen fairly close to Mawsil. She wondered if the herders had seen the messengers' conveyance, descending from the sky. That would have to be investigated.

A servant stood nearby. Servants were always at hand, except when the goddess chose privacy for herself. She turned to the woman, said, "Bring me Bagadat, please." The servant hurried away.

By the time the majordomo arrived, Sabium had the orders she would give clear in her own mind. She could see he was unhappy with them. But when he said, "Goddess, it shall be done," she knew he was telling the truth. Few mortals tried to lie to her, fewer still succeeded.

Mawsil, Stavros thought, was a tawdry town. Gateway to the Holy City, it was anything but holy itself. Its chief industry seemed to be separating pilgrims from cash. What really embarrassed him was how the people from the *Hanno* threw themselves into the spirit of the place. "Everyone's acting like a bunch of tourists," he complained to Magda: "running around buying every-

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thing in sight and gaping at all the fancy buildings. It's disgraceful."

This time she refused to take his side. "That's what you're supposed to do in Mawsil. If we weren't gathering great armloads of overpriced trinkets, the locals would be muttering behind their hands and wondering what was wrong with us. As is, we're effectively invisible."

"I suppose so," he said grudgingly. "It just doesn't seem very—"

"Scientific?" Magda suggested, grinning. "There's no law that says you can't have fun doing fieldwork, only one that says you can't make a spectacle of yourself. Someplace else, that might mean being quiet and contemplative. Here it means buying trash and oohing and ahhing over the sacred spot where Sabium—excuse me, the goddess—assumed the kingship of Mawsil. And since that last happened something like fourteen hundred years ago, it's worth a few oohs and ahhs."

"I suppose so." Now Stavros sounded more as if he meant it. "Tomorrow's the anniversary of that, by the way; there's a reenactment or some such ceremony planned."

"I suppose we ought to be there, then." Magda grinned again. "I wouldn't put it past the Mawsuli to hold an 'anniversary' once a month, to fleece each new crop of visitors. No, I take it back: Sabium would hear about that and put an end to it. But if they could get away with it, they would."

The entire contingent from the *Hanno* went to the plaza to watch the reenactment. It had something to interest anthropologists, historians, linguists, comparative theologians, and literary specialists. Also, they were supposed to be pilgrims, and that was the kind of thing pilgrims did. Staying away might make them conspicuous, which was the last thing they wanted.

Stavros whistled when he saw the rich display in the square, the large numbers of priests who joined the laity in celebrating the festival. "I owe the Mawsuli an apology, don't I? They must take this much of their faith seriously, anyhow."

"Maybe because it involves them," Magda suggested. "I have to admit I'm impressed. I didn't get to see this the last time I was here; the season was wrong. They have spent some money, haven't they?"

The plaza was gaudy with banners, streamers, placards, flags, fragrant branches. Behind them, Magda knew, the buildings were mud brick, as they had been when the *Leeuwenhoek* visited Bilbeis IV long ago. Nor were they much different to look at from those early structures. None of that surprised Magda. Hot-climate river-valley cultures built the same way almost everywhere; if something worked, people would find it.

But despite outward similarities, so much had changed. Iron, the alphabet, the very idea of progress . . . Bilbeis IV had risen far and fast, thanks to Sabium. In her at least, Magda thought, the Service had been luckier than it deserved.

Horns brayed, distracting her. A fat man came out onto the platform at one end of the square. He bawled something to the crowd through a megaphone. Thunderous, rapturous applause interrupted him. Magda and Stavros turned to each other. "What was that?" they

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said at the same time, each having caught perhaps one word in five.

"And now, ladies and gentlemen, our feature for the day," Magda guessed.

The robe, Magda saw, was much like the ones kings had actually worn when the *Leeuwenhoek* was here. Most cultures at this stage of development would have dressed the actor in contemporary clothes, having forgotten any other styles were ever worn. Sabium again, Magda thought. Not only was she pushing Bilbeis IV ahead, she also remained a link that gave it perspective on its past.

The horns blared out a fanfare, a theme that had once been the anthem of the kings of Helmand and now belonged to the goddess. "Nice touch," Stavros remarked, "though I suspect only Sabium gets the whole point any more."

The fanfare rang out again. The actor playing the king of Mawsil fell to his knees. The crowd gasped and murmured excitedly as the native playing queen Sabium made her appearance. She was wearing a robe as antique as the king's, but her simple, direct style contrasted curiously with his florid overacting. It might almost have been . . .

Observing the locals' reactions, Olmstead spoke in pontifical tones: "See the superstitious fervor with which they respond even to a representation of their living deity. The Survey Service has much to answer for, its machinations having propelled such primitives to a technological level far beyond their mental sophistication."

"Oh, shut up, you pompous fool," Magda snapped.

Olmstead glanced at her with what looked like scorn poorly masked by kindliness. "Even after exposing one of them, are you still blind to the fact that the Service makes such heinous blunders?"

"No, and I'm not blind to the fact that that's really Sabium up there either, the way you seem to be. Which gives the locals some excuse for being a little less restrained than usual, wouldn't you say?"

Olmstead, for once, said nothing at all, though his mouth silently opened and closed several times. The rest of the group from the *Hanno* made up for him; as they exclaimed and pointed, they were suddenly noisier than the natives around them.

Stavros had been paying more attention to the crowd than to what was going on up on the platform. Nowhere in any of the data on Bilbeis IV had he seen mention of a ceremony where so many priests mingled with the laity. He had been wondering why they were there until Magda's words made him stand on tiptoe and stare toward the platform again. He had never heard of the goddess' coming out of the Holy City, either. The priests had to be guards, to make sure nothing went wrong.

Someone took him by the right elbow: a priest, he saw as he turned in surprise. "What are you doing?" he asked. He had a moment of pleasure and pride: he got his grammar straight, and his voice did not squeak.

"You will come with us, please," the priest replied. To emphasize her words, another priest, this one a man, seized Stavros's other arm. He tried to shake free and could not.

As he struggled, he saw that all the Terrans had been netted with similar

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efficiency. No one else had been disturbed. No wonder Sabium's clergy were out in such force, he thought as the priests hustled him along. Finding out why too late seemed worse than never learning at all.

Magda, he saw, was going along quietly and without resistance. He remembered she had been taken by the clergy before. He managed to steer his way close to her and muttered his aphorism.

"Finding out too late, eh?" she echoed with a sardonic grin. "If you could come up with a better epitaph for this whole bloody planet, I don't know what it'd be."

Paulina Koch punched EXECUTE. She would not have minded implementing the command on the investigators who still peered at the Service like so many scavengers making sure the carcass they were going to eat was really dead. Hitting a computer button seemed a poor second best.

If this program runs, though, she thought, it may combine the literal and symbolic. She had thought that before, more than once, and been disappointed each time. Roupen Hovannis was even better than she had figured at covering his tracks.

The Chairman waited. Every time she had tried this before, her only reward was a blank screen. Seconds stretched, but whether in the computer's circuits or only in her own mind she did not know. No matter how she armored herself against them, she was not immune to anticipation or hope.

Surely now, she told herself, things were taking longer to develop than they had before. . . . The screen lit. Paulina Koch nodded, once, in satisfaction. Hovannis had been clever, but not clever enough. Now that she had access to one of his files, the rest would yield more easily.

Then she began to examine what the External Affairs Director had stowed away for stormy times. Her pleasure gave way to cold anger. A copy of the *Jêng Ho*'s report on Bilbeis IV, complete with the original, damning FSY date—Hovannis hadn't wasted any time taking his own precautions, had he? Recordings of several conversations between the two of them. She listened to a few moments of each of them, frowned. Taken all together, they were even more damning than she remembered. Others were not in this file, and had to be stored elsewhere.

She began the process of scrubbing the file—carefully, carefully, so that no trace it had ever existed was left behind. At last she knew she had done a proper job. And even while she was deleting that first dangerous chunk of information, her program, like a killer fish scenting blood in the water, had latched onto another. That one, she saw when she could look up from what she was doing, lurked in a completely different index. Clever, Roupen, she thought, but not clever enough.

She wondered how Hovannis was doing in the field. Now that his little data collection was being neutralized, an unfortunate accident might be the tidiest thing that could happen to him. Had she been certain of breaking his codes, she would have arranged for one.

She still had hope. Hovannis was ruthless and able, but like herself had risen through the Survey Service central

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bureaucracy. He had never been out on his own on a primitive planet. Any small mistake, Pauline Koch thought, could easily be his last.

"We apologize for the indignity to your persons," one of the priests told the people from the *Hanno*. She had said it at least a dozen times. She even sounded sincere.

"Give us back our clothes and gear, then," Pierre Bochy shouted. Other Terran voices echoed him. Once inside the temple, the priests had stripped the study team and confiscated everything they were carrying. A few people fought back, and got lumps for their troubles. As Magda had already found out, the priesthood of the eternal goddess knew some decidedly unprimitive combat tricks.

A couple of male priests came in with armloads of robes. "Here, you may don these for the time being," the woman said as they began to pass them out. "They are finer than the ones you were wearing. As I have said already, your own garments and goods will be returned to you, along with a goodly reward to salve your tempers."

"Believe her; she's telling the truth." Magda had repeated that almost as often as the priestess had made her apology, and with almost as little effect. Whatever Sabium's priesthood was, Magda felt confident it was not vicious. As with so much on Bilbeis IV, that reflected the character of the goddess.

Stavros, at least, had followed Magda's lead and offered no resistance. He glanced down at himself as he belted on the new robe (which was indeed of better quality than the one that had been taken from him), and said, "I'm just glad we were thorough with the dye-job."

She chuckled. "Yes, that would have been embarrassing, wouldn't it? I wonder what they'd've thought if they'd found us two different colors apiece, and that the hair hither didn't match the hair yon."

The priests had not gone so far as stripping off the Terrans' rings and bracelets, perhaps to help reassure their uninvited guests and perhaps, Magda thought, simply because it never occurred to them that such trinkets could be anything but what they appeared. The people of Bilbeis IV had got very sophisticated very fast, but not to the point of looking for recorders and video cameras disguised as jewelry. Several men and women from the *Hanno* moved their arms and turned this way and that to capture their surroundings on tape.

A plump functionary stood in the doorway, clapped his hands for attention. Magda grew alert. This fellow had been at Sabium's court before; if he was here now, Sabium could not be far behind. A moment later, his words confirmed her thought: "Bow, all of you, bow before the eternal goddess!" Despite his best efforts, his voice was shaky.

"I'm glad he's nervous too," Stavros muttered as he bent from the waist.

When he straightened, Sabium had taken her chamberlain's place. She was silently studying the group from the *Hanno*. Stavros had to work to keep from dropping his eyes when her gaze fell on him—and he was prepared for the moment, which Magda had not been when the *Jêng Ho* arrived. Tapes of-

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fered only the faintest suggestion of the calm majesty Sabium projected. She was, he thought, used to being worshiped, and used to deserving worship too.

Once she released him by looking away, he found he was not the only Terran to have fallen under her influence. Nearly everyone seemed as awestruck as he was himself. The effect, he saw with ironic pleasure, was particularly strong among the Survey Service personnel, who had perhaps thought themselves immune. Pierre Bochy, for one, looked almost ready to go down on his knees.

"Serves the obfuscating bastard right," Magda answered when he whispered that to her.

She felt uneasy herself; Sabium's glance kept returning to her. "We have met before," Sabium said. It was not a question.

So much for disguises, Magda thought. "Yes, goddess."

"Is this your true seeming, or do you wear it merely to appear less noticeable among my people?"

"The latter, not that it seems to have worked too well."

Magda's candor made Sabium smile, but the expression slowly faded as the goddess continued to look round the chamber. She turned back to Magda. "I fail to see your former companion, even in the guise you choose to wear now. Irfan was what he called himself, was it not?"

"Yes, goddess, that was his name." Magda felt sadness wash over her, sadness and rage at what had happened to Irfan Kawar. "I fear you will not see him again, goddess: he is dead."

The word hung in the air. Sabium recoiled, almost as if against physical attack. "Dead?" she whispered, sounding for once not the least bit queenly. "How can that be?"

Her priests glowered at Magda; seeing their goddess upset rocked their world. She understood better than they what the trouble was. Sabium had assumed all her long, long life that people from the Federacy were at the very least messengers from the old gods she alone remembered. Learning they were mortal after all had to come as a shock. Next thing you knew, Magda thought, she might even wonder if they were fallible.

On the record, people from the Federacy looked quite a bit more fallible than Sabium had been for centuries. Fortunately, the goddess would still be a while realizing that.

Watching Sabium adjust to an idea that wrecked a millenium and a half of assumptions only made Magda admire her more. Had she been that old, she suspected she would have rejected out of hand anything that did not fit her view of how the world worked. The goddess showed no signs of that. Maybe, Magda thought, the continuing changes that sprang from her incentive-for-inventions scheme had helped keep her mind flexible. And maybe, too, she was simply an extraordinary individual, and not just for her length of years, either.

On second thought, that last was too obvious to need a *maybe* in front of it.

Sabium turned to her priests. "I will speak more with these strangers later. Feed and house them as you would yourselves, but do not let them leave." She looked at the group from the *Hanno* again, rubbed her chin. "Take their or-

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naments from them, and sequester those with their other belongings. Who but they can say where their power resides?" She left the chamber.

Magda swore under her breath as the priests confiscated her bracelets, which held a video link, and her earrings, which were just jewelry. The little transceiver implanted behind her ear still gave her an audio link with the *Hanno*, but a lot of data was going to go down the drain.

Stavros's trinkets, like everyone else's, were also a mixture of the technological and the innocuous. After he surrendered them, he said to Magda, "She doesn't miss much, does she?"

"Wouldn't do to count on it," Magda agreed soberly. She'd thought the jar of wine she and Irfan had planted between the guards they'd stunned when escaping from the Holy City would explain why those guards had fallen asleep at their post. Evidently not.

Pierre Bochy pushed his way through the crowd to Magda. His broad face was troubled. "I am beginning to think I may owe you an apology. If that is truly the Sabium from the days of the *Leeuwenhoek*—"

"If!" Magda's momentary pleasure vanished. She bristled. "What do you want, letters of fire across the sky?"

"Please." Bochy spread his hands placatingly. "Whoever she is, she is a most remarkable woman." With that, not even Magda could argue.

"It *is* Sabium, the one you mean." That was Nina Pertusi, the linguist from the Noninterference Foundation contingent. She sounded very sure of herself, and explained why a moment later: "I have—I mean, I had—a voiceprint comparator in my jewelry. There's a perfect match between this woman's voice and the old recordings of Sabium."

"Is there?" Bochy said, while Magda and Stavros could not resist a simultaneous, triumphant, "You see?"

Servants soon fetched in food and drink. The meats and bread were strangely spiced but plainly well prepared, and served on silver. The beer was flat and the wine too sweet, but the locals liked them that way. Magda had tasted worse on some Federacy planets. She ate and drank her fill, and used one of the chamberpots set against a wall without thinking twice about it.

Nina Pertusi approached her again. Magda was sure the linguist would have been scarlet without her makeup. "How can you do that so casually? I am almost ready to burst."

"Haven't you—?" Magda began, and then reflected that maybe Nina hadn't. Linguists could get a lot done from tapes without going into the field. Magda patted her on the shoulder, and said as kindly as she could, "Honey, when it's really a choice between bursting and going, you'll go, no matter who's around. The first time will be dreadful, the second one'll be mortifying, the third embarrassing, but after a while you won't think about it at all."

Nina made a small, wordless, skeptical noise.

"It's true," Magda insisted. "Just remember, everyone else will be doing the same thing. That helps a lot. What they say about planets without soap is true—where everybody stinks, nobody stinks."

"I very much hope you are right,"

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Nina said, "but I fear it will not come easily for me."

"Don't worry about it," Magda told her again. The whole Bilbeis IV affair, though, had taught the anthropologist not to say everything she thought. By the looks of things, Nina Pertusi was liable to have plenty of time here in Mawsil to learn to lose her inhibitions.

As a professional, Hovannis admired the efficiency with which the locals had scooped the party from the *Hanno* into captivity. He would have admired it even more if they had proceeded to send the survey team on to the next world with appropriately bloody rites. That would have made his job a lot simpler once the *Hanno* got back to civilization. From the reports he had reviewed, though, he gathered this Sabium creature didn't operate that way. Too bad.

Still, he felt like cheering when the goddess' minions confiscated everyone's data-gathering instruments. These scientists, he thought, wouldn't admit the sun had come up until they checked a recording of it. The less information they brought home, the better the Survey Service would end up looking.

But the more he monitored the tapes still coming in from the survey team's transceivers, the less happy he got. Nina Pertusi's confirmation that Sabium was Sabium did not bother him. She was, after all, from the Foundation. What really did matter there was sticking to the story that Survey Service Central had never found out about what was going on on Bilbeis IV until just before the *Hanno* took off.

That was why Hovannis scowled when he heard Pierre Bochy sucking up to that Kodaly bitch. If things hadn't gone wrong with her too many times, the Service—and Hovannis—wouldn't have been in this mess. Didn't Bochy and the rest remember which side of their bread had the butter? Probably not, he thought, even if Paulina Koch had picked them for that.

He slapped his desk drawer. The stunner in there looked—and scanned—as non-lethal as any of the others allowed on the *Hanno*. That only proved Hovannis knew more tricks than the people who made scanners. The stunner's range was hardly more than arm's length now, but it would do the job.

No matter what the Survey Service scientists thought, he was *not* going to let this mission get out of control.

The investigator gave Paulina Koch a more-in-sorrow-than-in-anger look that he must, she thought, have practiced in front of a mirror. He said, "I truly resent the necessity of having had to obtain a court order to gain access to these codes."

You've made me work for a living, which is strange and unpleasant, the Chairman translated mentally. Out loud, she answered in the same formal language he had used: this was on the record. "The Survey Service had maintained the principle of privileged information since its inception. Despite the ruling of the court, I still maintain it, and strongly protest this seizure."

"But you will comply?"

"Reluctantly, I will." She handed him the floppy with the listings he needed.

"Thank you, Madam Chairman. Though my unit should have had these

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ten days ago, I am certain they will still prove invaluable to our inquiry."

She politely inclined her head. The investigator left, clutching his prize. Paulina Koch had not been lying when she defended the idea of confidentiality, but she had known the Service's court fight was foredoomed. As the investigator said, all it had done was waste time. The Service lawyers had told her the same thing, but they went out and fought for her anyway. That was what lawyers were for.

No matter how many codes he had, though, he could not find data no longer in the system. Now Paulina Koch was certain she had scrubbed away all of Hovannis's poison. Ten days ago, she had not been.

She did not show any outward signs of relief. Even if such had been her style, things were still too tight for that.

If these truly were divine messengers, Sabium thought, they were doing an excellent job of concealing it. They ate, they drank (they drank quite a lot), they produced full chamberpots as foul as anyone else's. Among themselves they spoke a language no one knew, but from the sound of things they mostly used it to quarrel. The priests had already broken up three or four fights before they got well under way. Divinities, by Sabium's lights, ought to act better than that. She certainly tried to herself.

Were it not for the curious objects the priests had confiscated from the strangers, she would have judged them mere men, foreigners from some distant land masquerading as subjects of hers. But those engimatic objects were like nothing known in her dominions. Whatever they were made of, it was neither wood nor metal nor pottery nor bone. Some could be felt to quiver, almost as if alive, when held in the hand.

None of which would have made them any more than strange, but when an incautious priest pushed a button she should not have, the two people beside her and two more in the next room were rendered suddenly unconscious. Every one of the strangers carried a device like the one which produced that remarkable effect. None of Sabium's scholars and savants had any idea how it worked or how to make anything like it.

The discovery had not surprised Sabium, not after the way the last two of these—personages—vanished out of her palace (and how, if not divine, had the woman changed her coloring so completely?). Its implications, though, worried her. With powers such as these strangers possessed, where in the world did they come from? Why hadn't her own folk found them long before, or they her empire? Even more to the point, why had they not come as conquerors? They were no normal people, that was certain.

And if they weren't people and weren't gods either, what did that leave? The only way to find out, Sabium told herself, was to ask. She had seen she could read the strangers almost as if they were her own subjects; they could not hide their bodies' involuntary responses to her questions.

When the goddess came to a conclusion, she wasted no time acting on it. "Fetch me the woman who was here before, the one who then had hair the color of copper," she told Bagadat.

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"Bring her new companion as well, the lean young man."

The majordomo gave a doleful nod. He resented the strangers for disrupting the smooth routine of the palace, and even more for vexing his deity. "Do you wish guards, goddess?"

"No, no," Sabium said impatiently. "There is no danger in these —personages; that is another thing about them that puzzles me. Go now, if you please. I assure you, I will be safe."

"As you say, goddess." Bagadat had trouble disbelieving her, but did not sound convinced, either.

"Why does she want me too?" Stavros asked for about the fifth time as priests hurried him and Magda through torchlit passageways toward the goddess. They were perfectly polite and made no move to touch the Terrans, but Stavros thought they would simply frog-march him along if he faltered or balked. When Sabium bade them do something, they were not used to getting no for an answer.

Magda, on the other hand, was by now out of patience with the question. "How should I know. why?" she snapped. "For all I can tell, she's divined what you said back on Topanga, and intends to invite you into bed with her."

For a moment, Stavros waited for the priests to react in horror to her words. Then he realized that, unlike him, she had spoken in Federacy Basic. Some of her slips of temper, he thought, were very calculated things. Annoyed, he shot back, "Then it's you who ought to be asking what you're along for."

"Maybe just to give helpful advice," she said sweetly.

He refused to be drawn. "With the experience Sabium has, I doubt she needs it."

"I didn't mean her," Magda murmured.

Feeling his cheeks grow hot, Stavros gave up. The banter was making him nervous anyway. Wondering what bedding a woman fifty times his age might be like was one thing back on Topanga: a topic of academic interest, so to speak. Even there, the prospect had been daunting. It was quite a bit more so when in the goddess' power.

Besides which, Sabium had shown about as much attraction for him as for one of the local draft animals, beasts which seemed to combine all the worst features of camels and zebras. In its own way, Stavros thought, that was reassuring.

Certainly the goddess' chamber was not set up for a seduction. Sabium waved the Terrans into chairs, seated herself in one facing them. A servant brought in wine and cakes, silently departed.

"What would you do if I told you I had ordered you put to death?" the goddess asked without preamble.

Magda and Stavros exchanged appalled looks. Magda had been thinking for some time that Sabium was not showing the group from the *Hanno* the same deference Irfan Kawar and she had got, but there was a lot of difference between less deference and a death sentence.

"Are you telling us that, goddess?" she asked.

"Answer my question as I asked it."

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Sabium's face was an unrevealing mask; her words might have issued from one of the countless images of her that were reverenced over this whole continent.

"First I would ask why, then I would start trying to figure out how to evade your doom," Magda said.

Sabium's gaze swung to Stavros. "First I would ask if you are telling us that," he said after a moment's thought. That drive for precision was part of him, Magda thought, and a valuable part when he did not, as sometimes happened, let it run away from him. He got no reply from the goddess; seeing he would not, he sighed and resumed, "After that, I would do as Magda said, though in the opposite order."

Humanity returned to Sabium's features. "That is as good an answer as I could have hoped for," she said with a small, amused smile.

"Why are you trying to make us afraid, goddess?" Magda asked, sensing no trip to the headsman lay in the immediate future.

"To see what you are, of course." Secure for ages in her power, the goddess did not bother dissembling. "You and yours seek to hide your purposes from me, just as you hide your true appearance beneath colors that ape my people's."

Since that was exactly so, Magda kept her mouth shut.

"And you." Sabium returned to Stavros. "What do you really look like, without your false pigments?"

"Me? I am a dragon, goddess, about twice as tall as this temple," he said in a sober, reasonable voice. "I breathe fire."

She gaped at him, then burst out laughing. "Are you indeed? I must say, you hide it very well."

Seeing Sabium's mood softened, Magda dared ask, "What do you see of us, then, goddess?"

"Still I do not know." Sabium frowned, as if she did not care to make that admission. "At times I feel in your folk the condescension a grown man might show, watching children playing with toys. And yet at other times your comrades have in them more awe for me than my own people display. You would help me if you could explain how both these things can be true at once."

Magda knew she was treading dangerous ground, even more so than in past conversations with the goddess. She picked her words with care: "For the first, I can only apologize; rude people are part of my nation, as they are of any other. For the second, well, your people know you, as they have for so long. Mine, on the other hand, have heard only travelers' tales. Those so often grow in the telling that the wonder is all the greater at finding them, this once, less than the truth."

"That is it precisely," Stavros agreed. He did not think he could have done such a smooth job of telling the literal truth without giving away the essential secrets behind it.

It did not do to count on too much in that regard, he discovered. Sabium's years let her fit together seemingly irrelevant bits of data as well as one of the mainframe computers back at the Federacy capital.

Her eyes measured Magda like a pair of locking calipers. "Yes, I know of travelers' tales. What I do not understand is where in the world they might

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have reached you. By the goods you carry, your people grasp the mechanic arts more deeply than my own, however hard we strive to learn. Yet we have found no land where that is so. Why have you not made yourselves known long before this?"

She no longer conceived of the Terrans as fellow gods, Magda noted; familiarity had bred contempt, at least that much. "We are a quiet, peace-loving people, goddess. We have little interest in other lands."

"Then why are you here?" Sabium's pounce was quick and deadly as a hunting cat's. "I think you have told me a lie. With the skills and devices you have"—she was searching for the word *technology*, which her language lacked—"you could not help gaining control over your neighbors, no matter how little you wanted to. I have listened to too many kings and princes proclaim how quiet and peace-loving they are, most of them just before they attacked me. No, those who have power will use it, and I do not see how you and yours could have gained your power anywhere in this world without brushing against my own folk more than you ever have."

Silence followed the goddess' words. Now neither Magda nor Stavros risked even a glance at the other; whatever they did or said could prove too disastrously wrong. For Sabium was right, of course: where technology existed, it would be used, and Bilbeis IV had no room for a technology about which the goddess had only the slightest hints to grow without impinging on her own state.

Magda wondered what that left. It left the existence of the Federacy and precious little else she could see. She hoped Sabium's vision was not wide enough for her to make the same connection. It had not been, when the *Jêng Ho* was here.

No sooner had that thought passed through Magda's mind than the goddess said, "How much simpler to believe all you oddly colored people spring from another world. Then we would have no report of you save when you wish it, and then you might own all sorts of strange arts without anyone around you learning of them." Her tone was musing, but Magda was not taken in by that. Sabium's centuries had left her better than a polygraph at gauging reactions to what she said.

This time, Stavros's thoughts ran along a slightly different track. As far as he could tell, the game was up when Sabium used the word "simpler." The goddess might not know Occam's Razor by that name, but she had to use it.

Neither Terran, then, for whatever reasons, felt much past a sense of inevitability on hearing Sabium's sudden sharp intake of breath. "And I had thought myself but making an idle jest," she whispered. "You will tell me at once how you accomplish this marvel. Is it a magic spell, or is there after all some means of flying my folk are as yet too ignorant to have come across?"

"Do not belittle your own people, goddess," Stavros said. "They have learned very much very quickly." He conceded other-worldly status, but hoped his praise of Sabium's subjects would keep her from noticing he had not responded to her main question.

He should have known better. For the first time, he heard menace and chilly warning in her voice. "I am not a child,

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to be evaded by such small, silly ploys. Answer, or learn of my displeasure." She sounded very much a goddess then, dreadful and remote. Stavros shivered.

So did Magda, but she asked, "Are you sure that is truly your wish, Sabium?"

Again came that sudden indrawn breath, but on a rising note this time. Magda saw with relief that she had reached the person behind the divine facade. Only the Terrans—and Sabium herself—now recalled that name. Her subjects had forgotten it an age ago; to them, she was but the eternal goddess.

"I had thought it so," she replied slowly. "I take it you claim I am mistaken."

"Only that you may be." Magda fought for steadiness. "I would but remind you that what is given is often valued less than what is earned. Or have you not found it so?"

Sabium, who rarely hesitated, took a long time before saying, "You used the same argument when you were last here, or led me to find it myself. Perhaps it is so. I will think on it, then, before I demand your reply, and will also question others of your party." She nodded, as much to herself as to her guests. "Yes, that is what I shall do. Return now to the quarters my priests have assigned you."

By this time (much to Nina Pertusi's delight), the Terrans were out of the central hall and in individual cubicles. Magda's and Stavros's had that convenient invention so many races stumble upon, the connecting door. He threw himself on the bed in her chamber, while she, too restless to sit still, paced back and forth. "Wonderful!" she cried, throwing her hands in the air. "Not only is she immortal, she's figured out the bloody Federacy, too. Next thing you know, she'll be running for the Assembly."

"I'd vote for her," Stavros said at once. "Wouldn't you?"

"In a minute," Magda agreed. "She'd do wonders for us. But picture the scene when the chaplain gives the invocation and she stands up and says, 'Thank you.' "

Stavros tried to, then gave up and laughed. After a while, he said, "It would never do. When was the last time you heard plain good sense in the Assembly."

"The day they decided to go after Paulina Koch," Magda said, her voice suddenly savage.

But Stavros tossed his head in Greek disagreement. "They even botched that, or we wouldn't be here—they'd have accepted your last report, and strung your dear Chairman up by the thumbs. Instead they sent out the *Hanno,* and this trip has done more to interfere with the development of Bilbeis IV than anything since the *Leeuwenhoek.* Before this, Sabium had no idea why she was the way she was, or about anything off Bilbeis IV. Now she does, and—"

"—by the time some of the people we have with us are done jabbering at her, she'll know everything short of how to design a stardrive motor," Magda finished for him. She took off her sandals, hurled them against a wall. A guard knocked on the outer door, asked if everything was all right. Sighing, Magda reassured him. She turned back to Stavros. "I really feel like smashing this whole place up, but they'd probably

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break in the door and stop me. That wouldn't look good."

"No." Stavros rolled over onto his back. "Why don't you come here instead? With this leather strap arrangement underneath, the beds don't creak." He held out his arms.

"Well, why not?" Magda pulled her robe off over her head. "It's one way to work off my nerves." Hardly a romantic commitment, Stavros thought, but better than nothing. He had long since concluded he was not going to hear many words of romantic commitment from Magda. One day, back in the Federacy, with no one hot on his trail, he would worry about that. Not now.

Afterwards, Magda leaned over and nipped him on the shoulder. He yelped. "What was that for?"

Her expression lay somewhere between mischief and malice. "I was just wondering if you still fantasized about having Sabium, now that you've met her."

He thought about it. After a moment, he tossed his head again. "Thank you, Magda, no. I only imagined I knew what intimidation was till I met her. I don't think I could manage it, even on divine command."

She snorted, a sound he had learned went with suppressed laughter. He poked her in the ribs. " 'If it weren't for the honor of the thing, I'd rather walk,' " she quoted. He poked her again. He was getting tired of ancient literature.

"Good evening, sir. It was kind of you to invite me here again tonight. No, thank you, I don't care for anything to drink or smoke, but do by all means please yourself." Paulina Koch waited while the Prime Minister fixed himself a gin and tonic. Not even now, she knew, could she afford any relaxation from full alertness.

Amadeo Croce sipped, set the drink down. "I appreciate your joining me on such short notice, Madam Chairman. Really, I should have invited you to Government House more often."

"In my years at the Survey Service, I've been here many times, sir." When Croce only nodded and did not respond to the veiled barb, the Chairman felt her confidence grow. The Prime Minister was as much executive as weathervane; he shifted with the winds of power. By his manner, Paulina Koch had gained strength since their last meeting. But she was too old a hand to ask how the investigation of the Survey Service fared. Instead she made small talk and waited; let Croce lose face by having to bring it up first.

At last he did. "I am glad to see that no evidence has been unearthed to connect you with the unfortunate turn of affairs we have witnessed in regard to Bilbeis IV." Not *that you are innocent*, she noted, admiring the careful phrasing. The Prime Minister owned more subtlety than she'd thought.

She said, "I am glad too, sir, and I know the reason no such evidence has been unearthed is that it never existed." Always when talking with Croce, she was conscious of the exact point in her sentences where she began to lie. She shoved that thought aside with practiced skill and went on, "Undoubtedly the entire contretemps will in the end be discovered to have originated from some clerk's inadvertent deletion of the report

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on Bilbeis IV before proper corrective actions could be implemented."

"So it would seem," the Prime Minister said. It did not sound like agreement. It sounded more like, *Well, we haven't been able to pin this one on you; too bad.* Considering the way things could have gone, that would do nicely.

"A remarkable woman, Sabium, truly a remarkable woman," Justin Olmstead declared, his rich baritone rising slightly to show just how impressed he was. More than ever, Magda chalked him up as a pompous ass. Neither she nor any of the other Terrans sitting around the table, though, could readily disagree with him there.

The priestly guards in the big audience-chamber looked bored. The group from the *Hanno* preferred Federacy Basic to the local language. Magda was relieved Sabium still let the Terrans gather together. Even if she no longer thought them divine, she still had to keep some lingering respect. It was, Magda suspected as she half listened to Olmstead pointlessly rambling along, more than they deserved.

She abruptly sat bolt upright, and she was not alone—several Survey Service people who had been enduring Olmstead's drone also seemed to wake up at the same instant. Her bellowed, "You did *what?*" was, however, the loudest of the chorus.

"I told her something of the working of the Federacy's parliamentary system when she asked," the other anthropologist replied, taken aback at the uproar he had caused. "She asked how we chose our kings, and when I told her we had none, she was interested in what we used instead. She grasped the principle very quickly."

"I'll bet she did." Magda spoke in loud, clear tones for the record being continuously taped on the *Hanno:* "I charge Justin Olmstead, a Noninterference Foundation appointee, with interfering in the cultural development of Bilbeis IV." When she turned back to Olmstead, she was snarling again: "You blundering booby, why didn't you teach her nuclear physics too, as long as you were about it?"

"I'll thank you to keep a civil tongue in your head," he said, scowling at her, "and what is this nonsensical talk of interference? I merely answered a few of her questions, in quite abstract terms."

"Yes—questions about things she'd never thought of before, and wouldn't have, without you. Service personnel get warned about that somewhere around the second day of training. And abstract ideas—say, like religions—" (she smiled nastily as she rubbed his nose in what was especially obvious on Bilbeis IV) "can change societies just as much as technology."

"Oh, but Magda, he's with the Noninterference Foundation, as you said, so how could his motives be anything but good and pure?"

She stared at Pierre Bochy in surprised admiration. The stateliness with which he delivered the sarcasm only made it more effective. She had not thought he had it in him.

"Fortunately," Stavros put in, "Sabium has better sense than Justin here, and won't necessarily rush out to try everything he blabs on about."

It always came back to that in the end, Magda thought. Because Sabium

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had good sense, things ran well on Bilbeis IV. As long as she was here, things would . . . and she looked likely to be here about forever. After so many centuries, Bilbeis IV was unimaginable without her.

The longer Roupen Hovannis listened to the scientific crew sing paeans to Sabium, the longer his face grew. Paulina Koch would not be grateful when the *Hanno* came back and filed a report that made the Survey Service look even worse than the *Jêng Ho*'s did. And when Paulina Koch felt ungrateful, bad things had a way of happening. Having caused a good many of them, Hovannis did not relish the prospect of being on the receiving end.

He wondered what the Chairman would do, were she here now. Of one thing he was certain: sitting quietly in the *Hanno,* kilometers away from the action, was not her style. But once she got to Mawsil, what then?

However tempting the notion was, Hovannis decided he could not take out the whole scientific contingent. This affair had seen too many such tragic but convenient accidents already. One more would draw too much notice. Too bad, he thought. Even the supposedly pliable Survey Service group was out of control. Dealing with a reasonably authentic goddess was more than they had been prepared to handle.

He wondered if he could arrange things through the chamberlain of Sabium's. That local—what was his name? Bagadat, that was it—plainly feared the Terrans for threatening whatever influence he had gained on his ruler. Reluctantly, Hovannis abandoned the idea. Sabium could read her people the way he read a printout. Knowing that, Bagadat would never even try to set up the job.

That moved Hovannis's thinking one step further down the line. What would Bilbeis IV look like, he wondered, without Sabium? She had lived an enormously long time; not many people back in the Federacy, his gut feeling told him, would be upset or, more to the point, suspicious if she happened to pass away. Down deep, people who hadn't seen her in action could not believe she was what she was.

And if she died, how would the locals take it? Only one image occurred to him: they would act like ants after somebody kicked in their hill. In that chaos, all sorts of interesting and profitable opportunities might arise. At the very least, Bilbeis IV would stop looking so outrageously abnormal.

What had Pierre Bochy said? Hovannis had it on tape somewhere—something to the effect that lots of peoples worshiped immortal goddesses. Only Bilbeis IV really had one, though, and if she suddenly became as legendary as all the rest of them—

That would fix a lot of problems, Hovannis thought. Paulina Koch couldn't have come up with a neater solution. He took out his modified stunner, tucked it into a pocket of his coveralls.

He drew a few odd looks when he checked out a flyer in Bilbeis IV disguise but Federacy clothing. The only people who would have asked serious questions, though, were already in detention in Mawsil. None of the technicians and engineers did more than

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scratch their heads when Hovannis skimmed silently off into the night.

Stavros rolled the wooden die, thumped his thigh with his fist as he saw a four turn up, and took Magda's last man. She said something rude. "That's fifty-five you owe me now," he grinned.

She stared at him. "The hell you say. I was up fifty, not down—you only owe me forty-five now." Putting five a pop on one of the local board games made it more interesting. They'd been playing since Magda begged a set from a priest not long after they took enforced residence at the temple. They'd also, evidently, kept their running totals running in opposite directions.

"Come on, Magda," Stavros protested. "Remember that hot streak I had a couple of nights ago?"

"Sure I do," she retorted. "Without it, you couldn't have afforded to get back to the Federacy. Weren't you bitching that I was going to end up owning your grandmother?"

"You'd be welcome to her; then you could put up with listening to how nothing that's happened to her in the last eighty-odd years has been her fault." Stavros set his jaw. "But you have to win her fair and square. I'm not going to let you cheat me out of her."

Magda started to laugh, stopped. "Dammit, I'm not cheating." As absurd arguments have a way of doing, this one was turning serious. She took a deep breath. "You really think you're up on me?"

"Yes, I do. In fact, I'll put another fifty on it."

"You're on." Glaring at him, close to being really angry now, she kneaded the transceiver behind her right ear. "I'll show you," she muttered.

"What are you doing?"

"Calling the ship. You get in on this too, so you can't say I'm diddling with the count. We'll listen to the tapes of our game sessions and figure out who owes whom what."

"That will take hours," he protested.

"Do you have any urgent appointments?" she asked, and he had to chuckle as he denied it. "All right, then." She waited, swore. "God, are they all asleep over there? Where is everybody?"

At that moment, she and Stavros heard a voice in their heads. "Richards here." Magda told the first officer what they wanted. "Can't do it," he said, "not right away, anyhow. Captain Hovannis is out of the ship."

"So?" Magda's voice was dangerously quiet.

"So no traffic from the ship to you people without his authorization. Standing orders. Sorry." He did not sound sorry. He sounded bored. Magda had not had much to do with him aboard the *Hanno*, but did not think he worried about standing orders, except in how he was going to carry them out. Usually, that was a good trait in a first officer. Now it was only frustrating.

"Get him on the comm circuit," Magda said.

"No, wait," Stavros broke in. "Where is he? What's he doing?"

"I don't know." Richards said. Plainly, he had never thought to wonder.

"We're just fooling around here," Magda said, "but what if somebody needed something really important? It's

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a silly order, Richards. Get me Hovannis and get him now; I'll tell him so myself."

"Very well." There was a pause before Richards came back on the circuit. For the first time, his voice held a trace of uncertainty. "He's not answering."

Magda rolled her eyes, a piece of dramatics unfortunately wasted because the first officer had no vision screen in front of him. "That's good. That's really good. In his absence you're in charge, right? Countermand that stupid piece of nonsense and give us what we need."

She was so intent on what was directly in front of her—and on proving herself right—that she did not worry about anything else. Stavros, more suspicious of Survey Service people generally and Hovannis in particular, interrupted again: "You didn't answer me, Richards. Where is Hovannis? The flyer must have a tracer on it, in case it crashes or something."

"It does," Richards admitted. He went off-circuit again. A couple of minutes later, he said, "The machine is grounded a couple of kilometers outside Mawsil. Sorry I took so long; the tracer seems to be inactive, and I had to home on engine emissions. Otherwise, the flyer is mechanically sound. Still no response from Captain Hovannis. Odd." From Richards, the word spoke volumes.

"What *is* he doing?" This time Stavros was talking to himself.

"Coming into Mawsil, sounds like," Magda said. "But why is he sneaking in instead of just coming ahead?" She suddenly cut Richards out of the conversation, gestured for Stavros to do the same. He cut off the first officer in midquestion, as puzzled as Richards was himself.

"What the—?" Stavros began.

Magda's frantic gesture reduced him to silence again. She opened the outer door, nodded to the pair of guard-priests outside. "Would one of you please fetch me a slate and a lump of chalk?" The woman of the pair nodded back, ambled away; Sabium had made clear that her guests were to haave any reasonable requests met. The little while the guard was gone seemed like forever to Magda.

She shut the door in the guards' bemused faces, scrawled a note to Stavros: HOVANNIS HERE FOR NO GOOD REASON. WHY ELSE SNEAK?

"You're right! You have to be. He—!"

Stavros shut up again; Magda was scribbling, RICHARDS CAN STILL LISTEN—EVERYTHING GETS RECORDED. IS HE SAFE?

"I don't think it matters," Stavros said. "If Hovannis is coming here for reasons of his own, this will all be decided before Richards can raise him. And if what he's doing is against the rules, he won't call back to the *Hanno* to advertise it. Am I right?"

Magda hesitated, then conceded, "Seems reasonable."

"All right, then. The next thing we have to do is think, and think hard. Otherwise we'll go rushing off and maybe give him the opening he needs. My first guess would be that he's after us, or maybe after the whole group here, now that the rest of them know about Sabium too. It would fit everything the murdering bastards who run the Service have done so far: Fogelman, and An-

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drea, and the *Clark County*, and your apartment complex too."

Magda started to jump up, then stopped. "You're right and you're wrong at the same time. What does the Survey Service need most from Bilbeis IV?"

"A clean bill of health, and they're not likely to get one."

"Too bloody right they're not. But they won't get one from a dead crew of scientists, either. That would probably be one too many coincidences for anybody to swallow, don't you think? The Service can't afford more bad publicity; for once, they have an interest in keeping us healthy."

It was Stavros's turn to consider. "Well, maybe so," he said grudgingly. "All right, then, maybe Hovannis isn't coming here to slaughter us in our beds. He's not on his way to give us a great big kiss, either. He wouldn't have to skulk in to do that. What does that leave?"

"Nothing." Magda did not like the answer. Roupen Hovannis was not coming into Mawsil—or inside by now, she thought uneasily—for any good purpose; Stavros was dead right there. But she was still sure Hovannis would not, could not move on them. A decimated *Hanno* returning to Topanga would look even worse than a damning report. Magda balled her hands into fists. She felt as if her mind were running in a treadmill, a treadmill with no way off.

Then she saw there was one, after all. Stavros must have reached her conclusion at the very moment she did, for they both spoke the same word at the same time: "Sabium!"

They ran for the door together.

* * *

Hovannis was sweating and swearing as he neared the city walls of Mawsil. He was also filthy; he had taken a couple of nasty falls walking in the darkness through fields and in a dirt roadway full of holes.

Though he did not realize it, he was lucky the town's gates were open. Most places locked themselves tight after nightfall. Had the eternal goddess not spent so much time in Mawsil, it would have done the same. But pilgrim traffic was beginning to shift away from the Holy City, and Mawsil opened itself to accommodate the sudden—and profitable—influx.

All the same, the guard yawning in his sentry-box cast a dubious eye on Hovannis as he trudged toward the town. "Why aren't you carrying a torch to light your way, fellow?" he called.

The true answer was that Hovannis had not thought of it; he had never had to worry about such things before. "It went out a ways back," he said lamely, adding, "When I fell in the last pothole."

The guard laughed. "A few potholes before that, by the look of you. What are you coming to Mawsil for?"

Despite Hovannis's draggled state, the question was strictly *pro forma*. The guard heard the same answer hundreds of times a day: *To see the goddess, of course*. Had Hovannis taken a moment to consider, he would have realized that. But the topmost thing in his mind was that his mission had to stay secret. Not only that, he was offended that this native, this savage, dared question him. Thus his answer came out as a reflex snap: "None of your damned business!"

"No, eh?" The guard was suddenly

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alert. He hefted his spear. "Come along with me, then. We'll make it my captain's business instead. You keep your distance there too," he warned as Hovannis took a couple of steps toward him. "By the goddess, I'll stick you if you come any closer."

"I don't need to come any closer." Hovannis twisted the doctored stunner on his belt so it pointed at the local, squeezed the firing stud. He hoped he was close enough for the weapon to work. He was. The guard toppled bonelessly. Hovannis eased him to the ground so his mailshirt would not clatter, checked to make sure he was not breathing, and then, feeling a bit like a primitive warrior himself, sauntered into Mawsil.

He soon decided the best thing anyone could do with the place was bomb it and start over. It stank of sewage and smoke and unwashed people. Hovannis heard scuttlings in the darkness around him. Some were vermin; others, he was sure, were vermin that walked on two legs. He wished his stunner had more range.

The people he could see disturbed him almost as much as the ones he could not. Disease and injury did not leave their mark so openly on civilized worlds. He had never seen a woman with an empty eye socket before; now he spied two in the space of a couple of blocks. Till now, he had never thought himself fastidious. He was finding his standards for comparison had been deficient.

Relief flowed through him as he spotted the mud-brick building—ugly pile, he thought—where Sabium was staying. He gave the stunner an affectionate slap. The sooner this job was done, the sooner he was back aboard the *Hanno*, the happier he would be.

"Harm me? Why should he wish to harm me?" Sabium stared at the two—whatever they were—as if they had begun to speak a foreign language she did not quite understand. She wished they did not wear the seeming of her own people; their true, alien, colors would have helped remind her how strange their thoughts were.

"It has to do with the politics of our, uh, homeland," replied the woman called Magda. The goddess sensed she was telling the truth. A wave of sadness swept over Sabium. No matter what she had thought, no matter what she still wished, these were truly no gods after all. Yet their kind had made her immortal. She would have to think long and hard on what that meant.

No time now. The young man with Magda—Stafros was the best Sabium would do with his name—said, "This man means more than harm, goddess; I think he will kill you if he can."

Sabium's servants gasped at the blasphemy. The goddess saw that, like his companion, this Stafros was speaking the truth as he saw it. As he saw it—there was the rub. She could also tell he hated and feared this Hofannis. Maybe even he did not know how much that influenced his perceptions, and if he did not, how could she?

A priest came into the chamber, bowed before her. "Goddess, I pray your forgiveness for disturbing you," the woman said, "but outside the temple is one who would have speech with you."

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"Yes, I know," Sabium replied calmly.

The priest accepted that with barely a blink; the goddess was the goddess, and had her ways. The priest resumed, "A street vagabond, or even a magnate, we should of course have turned away to ask for a regularly scheduled audience, but this man wears the garb described in your Rituals of Search: the trousers and tunic all in one, and all over pockets. He is colored as we are, but—" She eyed the two strangers with Sabium.

"Yes, that matters less than formerly," the goddess agreed. She took a deep breath. "I will see him. Prepare the audience chamber in all ways."

She had to raise her voice to finish. Magda and Stafros were trying to interrupt with shouted objections. Her servants stared in openmouthed horror; no one ever interrupted the goddess. None of her subjects would even have thought to. The strangers might not be divine, but they were very strange. Sabium had thought that before, often enough.

Now it was a nuisance. "Silence," she proclaimed, and was gratified to find that the tone of command worked on the strangers, though more slowly than on her own people.

The priest had already gone to do her bidding. She turned to Bagadat, faithful, fearful Bagadat. "Have these two escorted into the chamber after me. Make sure the escorts are large and powerful. I will not tolerate interference from them."

For some reason, that touched off hysterical laughter in the woman called Magda. Neither she nor Stafros resisted the soldier-priests who took their arms. Bagadat paced along beside them, trying to look strong and stern and not succeeding very well.

Sabium set her hands on the arms of the throne in the audience chamber. They did not feel quite right; she realized they were not worn to conform to her flesh through centuries of use. Neither, sadly, was the seat, and a goddess, she knew instinctively, must not squirm. She sighed instead.

"Fetch in the stranger," she said.

"Is she crazy? Does she want to die? Does she think we're kidding her?" Stavros said. He had lost track of how often he'd repeated that on the way to the audience chamber and now here inside it as they waited for Hovannis to arrive. His guards must have thought it some kind of prayer.

Magda had her own litany. "Goddamn denim coveralls," she muttered over and over, which made little sense even to Stavros. But the Service's field costume had been standard so long that Sabium had seen it on the crew of the *Leeuwenhoek* . . . and she, above all others, had a special reason to remember it.

Set against that, comfort and practicality did not, for once, count for much. They should never have had the denims aboard the *Hanno*. Fine time to think of that now, she reflected bitterly, as the priests hustled her into the audience chamber.

Flanked by their keepers, she and Stavros were made to stand to the left of Sabium's throne. "Neither by word nor deed shall they meddle in the judgment of this man, for it is mine alone,"

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the goddess warned her captors. She turned to the Terrans. "Know you shall answer to me, if your accusations prove false."

A tide of despair washed over Magda. No matter how long Sabium had lived, she looked to be an innocent after all. A planetful of people loved her, and she could not conceive of anyone who did not.

"Goddamn denim coveralls," Magda said again. It did not help, but nothing else did either.

Following the local priest, Roupen Hovannis felt as though he floated upon a rising tide of confidence. Ever since he knocked over that guard, everything had gone well. He'd more than half expected to be kept cooling his heels till morning. As things were, though, he'd likely be back in his own bed by then.

He gave his stunner another slap, liking the idea.

The native, who smelled overdue for a fumigation, threw wide a door. "The goddess awaits you," the fellow declared.

Hovannis strode in. His eyes darted round the room, as they did when he entered any unfamiliar place. He spared not even an instant for the play of light and darkness on the filigree-work walls; he wanted to see where the people were, the better to work out his upcoming getaway.

He spotted Stavros and Magda in the crowd to the left of the raised chair near the far wall. They did not make him hesitate. Once Sabium unexpectedly expired, all the locals would rush to her. Then the traitor and her lover could meet misfortune too. The stunner was silent. A couple of people falling down would attract no attention. If they didn't happen to get up afterwards, too bad—surely they had been trampled in the confusion.

Checking the place out took only moments. Then, at last, Hovannis looked toward Sabium. He was glad he had not glanced her way before, by accident; he surely would have revealed himself had he met her eyes unprepared. He found out what other Terrans had before: films just did not convey the awe she inspired. Perhaps part of it lay in the way she sat, as if she had all the time in the world. Why not? he thought—she did. Her gaze was the most arresting he had ever known, and he could never have told anyone why. But it was.

Still, he did not falter. He had kept secrets from Paulina Koch, and done it so well she never suspected. He had, in fact, kept secrets all his life; that was what an External Affairs Director, or even a security chief, got paid for. And did being an old primitive (or even an old, old primitive) make Sabium any less a primitive, or anything more than a primitive?

That he posed the question at all meant the answer was yes. He did not let it bother him. He had control over himself again. He did not think anyone else would notice he had lost it.

"What would you of me?" Sabium asked.

"Eternal goddess, I thank you for consenting to see me in such irregular fashion and at such an irregular time." He bowed, took a step forward. "I have traveled a great distance because of your glory." He bowed again, amused at actually telling the truth. He came an-

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other couple of steps closer to the throne. Soon, now . . .

Sabium was rarely puzzled, but these strangers had a gift for perplexing her. This one, by wearing clothes of his people's style rather than hers, set off further confusion in her, casting her memory back a millenium and a half to the pair whose cure for her illness had left her immortal.

Resolutely, she pushed that secondary confusion aside, for it only distracted her from the greater ambiguity surrounding this stranger: she could not read him. That was not because of his race; Magda and Stafros and the rest of them were no harder to gauge than her own people. But this one, this Hofannis, drank in her examining glance and gave back nothing.

She sensed no violence in him. At first that reassured her, and made her doubt the warnings the other two had given her. But the fellow did not seem particularly well-disposed to her, either. He was just—there. Her doubts returned.

"Why did you not come here at the same time as the rest of your countrymen?" she asked him.

"I had duties I could not set aside," he replied, slowly walking forward. "Still, knowing you are unique, I hurried through them so I could see you myself before we departed your land —with your gracious permission, of course."

Was he close enough now? Yes, probably, Hovannis thought. He took one more step, just to be sure. His hand drifted toward his stunner. No need to rush things now, and spook Sabium. She would not know what a stunner was—not for long, anyway.

"What's he going to do, knock her out?" Magda whispered; she saw where Hovannis's hand was going. "He really has lost it—"

"It makes no sense," Stavros agreed, "unless that stunner isn't just a—" He stopped, appalled at where his mouth, without much intervention from conscious thought, had led him. He and Magda both opened their mouths to shout.

At last, as the stranger's hand approached the weapon that hung on his belt, Sabium read the tension in him and knew what it had to mean. She made a tiny gesture of her own.

The arrow that pierced the palm of Hovannis's right hand came as such a complete surprise that for a moment he only stared at it foolishly, as if wondering how it had come to lodge there. Then the pain reached him, and with it the realization he had been outguessed after all.

Another arrow struck him, this one in the right shoulder. The impact drove him back, away from Sabium. When he tried to use the arm, he found it was dead.

He snarled and tried to reach across his body with his left arm. But he was a long way from ambidextrous, and now the stunner's grip went away from his hand instead of fitting smoothly into it. That first hasty grab failed to pull the weapon free. He did not get another chance. The plump local who stood to

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one side of Sabium's throne jumped on him, hurling him to the floor. The native cursed and pummeled him.

The fellow was no warrior; with two good arms, Hovannis would have ruined him in seconds. Even wounded as he was, he took most of the local's punches on the top of his head and in other places that did him little damage. He drove a knee into his foe's soft middle, doubling him up with a grunt of pain. At last his hand closed on the stunner. He jerked it free, gave the local a full charge. The weight on top of him went limp.

Too late! Other natives were rushing up. Something—a foot or a club, Hovannis never knew which—exploded against the side of his head. The world spun into darkness.

When Magda and Stavros would have run forward to help bring down Hovannis, their guards restrained them, as if not trusting them not to take his side. "Let me go, you fools!" Magda shouted. She tried to break free. She failed, for Sabium's priests knew as many fighting tricks as she did.

Stavros, who did not, struggled less. Instead of writhing, then, he was watching as one of the priests bent by the fallen Hovannis to pick up his stunner. "Beware!" Stavros cried, urgently enough to pierce the din and chaos of the audience chamber and make the priest look his way. "Touch it wrongly and it may spit death."

"I think not," the priest said with a condescending smile. "We have made some study of these strange weapons you people carry. How you make them we have not learned, but we know they only cause sleep; they cannot slay."

"You stupid, trusting bastard," Magda yelled at him. She was still trying to get loose, but only by fits and starts. She was beginning to be convinced she couldn't.

Sabium spoke; at the sound of her voice, everyone else in the chamber fell silent. "See to poor Bagadat there beside that villain," she said. "If he but slumbers, you will be proven right. If he is dead, you shall add your thanks to mine, for then we shall both stand indebted to these strangers' warnings."

A few moments later, the priest said in a small voice, "He is dead, goddess." He put the stunner down, very carefully, then bowed low to Stavros. "As the goddess says, I am in your debt."

That seemed to persuade the locals still holding Magda and Stavros they could safely release them. "Goddess, where did the arrows come from?" Magda asked, her disposition improving quickly once she was free. "I thought you were doomed."

Sabium gestured at the filigree panels behind her throne. "Show yourselves," she commanded. Eyes appeared in several openings; arrows poked through others. "I am not unprotected," the goddess said. "I doubt if age or sickness may claim me, but I have never been so certain in the case of arms. The two of you having shown your concern, I took no chances."

Hovannis stirred and groaned, which served to recall the locals' attention to them. "He sought to kill the eternal goddess," one of them said, her eyes wide with horror at the thought. "For that he deserves death." A priest car-

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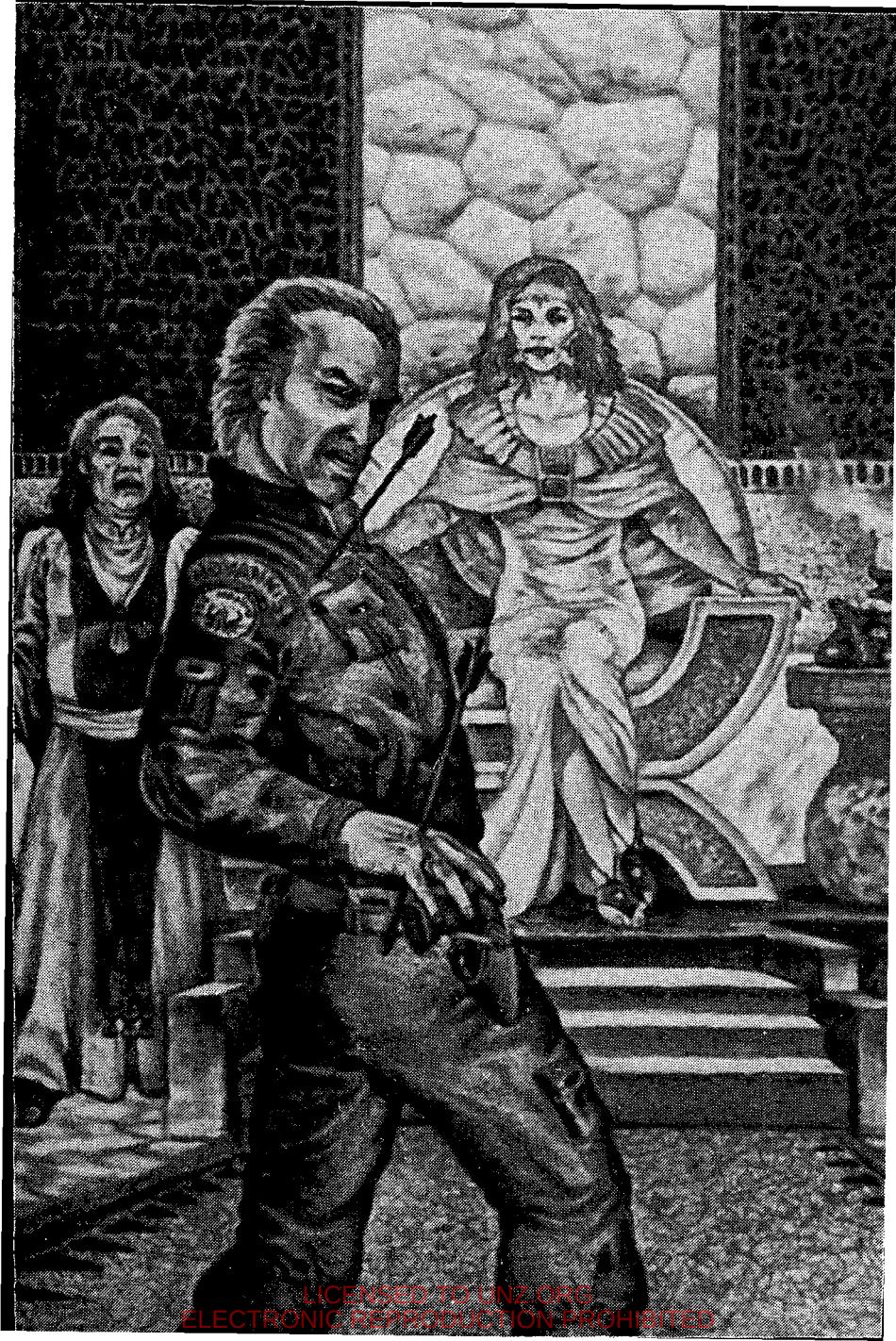
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rying a spear advanced on the downed Terran with deadly purpose.

"No," Sabium said. The priest halted, her spear poised above Hovannis. She obeyed her deity, but rebellion smoldered in her eyes. Then Sabium spoke again, and now her voice was that of the goddess passing sentence: "He wantonly slew my faithful majordomo Bagadat, who tried to protect me. For *that* slaying, he deserves death."

The priest drove the spear home.

Magda almost cried out to protest the abrupt, unappealable sentence. Her mind was filled with thoughts of trials, of how Hovannis should be taken back to the Federacy to face justice there. But she could not speak of those things to Sabium, not without doing violence to the rule of noninterference. That rule had seen enough violence on Bilbeis IV. And so she hesitated for the bare instant between condemnation and execution, and then it was too late.

She did not feel very guilty. Hovannis's crime—and his attempted crime—were too blatant for that. Murder was foul enough in any case, but Sabium's death would have been a cataclysm to rock all of Bilbeis IV. And for what? For politics, she thought distastefully.

Stavros never had any impulse to cry out. As the spear went into Hovannis's vitals, he thought the External Affairs Director was getting exactly what he deserved. Then he watched, and listened to, and smelled, the man die. It took a long time, and was worse than anything he had imagined. He had to look away. Hovannis's feet drummed and drummed in the ever-widening pool of blood that poured from his belly.

Finally he lay still. Only then did Sabium (who, unlike Stavros, watched to completion what she had ordained) turn her notice back to the two living Terrans in the audience chamber. She said, "I owe you a great debt for warning me this"—she nodded at the corpse—"was a miscreant. Had you not done so, I might have failed to take the precautions that saved me. Because you are who and what you are, I do not know with what gifts I might please you most. Therefore I say to you, choose your own reward. If I may give it to you, I shall."

Magda and Stavros looked at each other. His mouth soundlessly shaped a word. She nodded; the same thought had been in her own mind. She said, "Goddess, nothing would please us more than your having our belongings returned to us and our countrymen and letting us go home."

"It shall be done, of course," Sabium replied at once. "But is that all? Ask more of me than such a small thing."

"Goddess," Stavros said quietly, "freedom is never a small thing."

Sabium paused to consider that. "I think you may be right," she said at last.

Topanga's heat and sunshine reminded Magda of the vicious weather in the Margush valley, but were less oppressive somehow: probably, she thought, because she could go into the cool indoors whenever she wanted. On Bilbeis IV, buildings were as hot inside as out, and sometimes—especially at night—hotter.

Now she was out in the sun and reveling in it. She and Stavros stood outside the Survey Service field office

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while a swarm of holo cameras hummed and whirred around them. The floppy she carried weighed no more than any other, but seemed heavier.

"Do you have a statement, Ms. Kodaly?" a reporter called.

She'd answered that question a hundred times in the couple of days since the *Hanno* came home. She had it down to half a dozen words now: "We were right the first time."

Stavros was willing to amplify that; media people were arriving on Topanga in a steady stream, and this poor woman might not have had a chance to ask anything before. He said, "Even the scientists handpicked by the Survey Service acknowledge that serious interference did take place on Bilbeis IV."

"Hard for them to get around it, when their own captain tried to get rid of the main evidence for that interference with a stunner he'd cooked up somehow into a deadly weapon," Magda agreed.

Peter O'Brien swung open the door to the office. "Here we are, back where it all began," the head of the local branch of the Noninterference Foundation said expansively. "Here the first true report on Bilbeis IV was delivered, and here we deliver the truth again. This time it will not be suppressed."

Magda wished he would shut up; for that matter, she wished he was not there at all. But the Foundation lost no chance to promote itself, and without it, she had to admit, the Service probably never would have felt enough pressure to send out the *Hanno*. In recognition of that, she decided not to step on O'Brien's foot as she and Stavros walked past him.

With as much good grace as she could muster, she endured more delay while the reporters jockeyed for position inside the small Survey Service office. She looked around. "Where's Pandit?" she demanded. "He's the clerk who took my report every time I sent it in to Central—only right he should do it again."

The coordinator in charge of the office looked embarrassed. The reporters looked delighted—here was something unrehearsed, while these formal events usually were stylized as *noh* plays. The coordinator cleared her throat. "Ah," she got out, "intermediate clerk Pandit is in custody, charged with failing to properly transmit your report before. He was, it is alleged, a confederate of Roupen Hovannis's."

"But that's absurd!" Magda said. "I saw him send it."

"Are you sure?" Stavros murmured. "Do you know what all the gadgetry back there does?"

She frowned. "It seemed simple enough."

The coordinator stepped forward and presented her better profile to the camera. "In any case, I will be pleased to handle the data transmission personally."

Reluctantly, Magda handed her the floppy. She watched carefully as the coordinator fed the floppy into the machine, hit the TRANSMIT button. After a while, a light went from red to green. "The document has been acquired at Survey Service Central," the coordinator declared.

"She did the same damned thing Pandit did," Magda said mulishly.

"Have you an opening statement, Chairman Koch?" asked the reporter

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who was serving as moderator for the news conference.

"Yes, I do," Paulina Koch replied. A ripple of surprise ran through the Survey Service auditorium. Paulina Koch usually let reporters have at her as they would. Only a few veterans in the seats out there could remember the last time she'd broken that rule.

"Very well, then." The moderator stepped aside.

"I thank you, Mr. Mazyad." Paulina Koch took a deep breath, stepped up to the podium. This was it. If she got through this conference, she could ride out anything. If not. . . . She built a wall around that thought. She would get through, because she had to.

She said, "To you, my friends"—if she was going to lie, might as well start early—"and through you to the people of the Federacy, I offer my apologies and pray for your pardon. I, and through me you, have been betrayed. In all innocence, I told you that no deception was involved in the Survey Service's handling of the Bilbeis IV affair. It now appears I was in error.

"For reasons of their own, Roupen Hovannis and staff members of the External Affairs Division under his direction did attempt to destroy the report the survey ship *Jêng Hô* presented on Bilbeis IV. When their efforts began to come to light, they even engaged in acts of violence to hide their prior wrongdoing. Roupen Hovannis's death on Bilbeis IV itself came as the direct result of the last of those violent deeds.

"As Survey Service Chairman, I must of course take ultimate responsibility for the actions of all my subordinates. I stress, however, that I was unaware of Hovannis's machinations and was systematically lied to in my attempts to uncover the truth. The same applies to Dr. Cornelia Toger, whose investigative efforts were systematically hamstrung by Hovannis's henchmen."

Always a good idea to mix in a bit of truth, the Chairman thought. She went on, "Dr. Toger has offered me her resignation. I have not accepted it. She has done nothing wrong. Her next task, like mine, will be to restore effectiveness to the Survey Service, and to restore public confidence in it. Now I will take questions."

"Have *you* offered to resign, Madam Chairman?" a woman called, springing up out of her seat in her eagerness to be recognized.

"No, Ms. Kluhan, I have not. I have confidence in my own innocence, and I feel I am still needed here. If Prime Minister Croce disagrees, I am sure he will make it known to me."

Actually, she was afraid Croce might have accepted a resignation. Requiring him to take the first step made things harder for him. No evidence focused on her. By now, she was sure she had done a good job of scrubbing the data banks.

"What are these mysterious 'reasons of their own,' Madam Chairman?" asked the next reporter at whom Paulina Koch pointed.

"Mr. Basualdo, I would not presume to act as speaker for the dead. Roupen Hovannis's motives, whatever they were, lie with him on Bilbeis IV. I would hope he acted out of a sense, however misguided, that he was serving the long-range best interests of the Survey Service. If so, he proved tragically in error.

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But let me say again, that is only my hope. We will never know."

That was all Paulina Koch had ever tried to do: serve the long-range best interests of the Survey Service. If she survived this, she might even have succeeded. She wondered for a moment how Sabium would have done, were their positions reversed. Then, brushing aside such a non-essential thought, she fielded another question: "Yes, Mr. Goldberg?"

"What about the eighteen missing days?"

The little man looked smug, thinking he had caught her out. Now she had an answer, though, and one that did not incriminate her. "I must assume, Mr. Goldberg, that when Van Shui Pong" —she prided herself on having the reporter's name ready to bring forth —"accessed the correct arrival date of the *Jêng Ho*, it called attention to the blunder Hovannis's henchmen had committed in not altering it prior to that point in time. The error was then rectified, but not before the discrepancy had been noted."

Goldberg sat down, deflated. Paulina Koch pointed. "Yes, Ms. Wakuzawa?"

"Damn her, she has all the answers," Magda said, watching the Chairman demolish another questioner.

Stavros made a disgusted noise, deep in his throat. "Yes, but do you believe any of them?" When Magda did not answer at once, he looked at her sharply.

"I'd like to," she admitted at last. "I've been with the Service my whole professional life. I'd like to think we're clean at the top."

"What are the odds, though? How could anyone think the things they've done somehow magically stopped one rung below Paulina Koch on the ladder, and that she never looked down to find out why there was a stink under her feet?"

"I don't suppose I do," Magda sighed. "I'd like to, that's all. And there are plenty of people who will, just because they can't see past their noses."

"Everything worked out so bloody well for her—"

"That's what you get for hanging around with me," Magda interrupted. "You're starting to talk the same way I do."

But Stavros refused to be sidetracked. "She's piling all the blame on Hovannis, and he's not around any more to give her the lie. It couldn't have worked out better for her if she planned it herself."

"What did you think of the Survey Service Chairman's performance last night?" asked the woman whose desk at Hyperion Newsnet was next to Van Shui Pong's.

"Didn't watch it," he answered shortly. Since leaving—fleeing, he told himself in harsher moments, was really the proper word—the investigation of the Bilbeis IV affair, he had not paid much attention to it. He wanted to think that sprang from simple prudence. More likely, it was guilt.

Shaking his head in annoyance, he started working his way through the morning mail. A lot of the floppies he got ended up erased so he could reuse them; what some people thought newsworthy never stopped amazing him. Today's run of the stuff that didn't come

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through regular channels seemed especially bad. Fortunately, telling when something was tripe usually took only a few seconds.

He blanked the floppy that was in his terminal, took it out, inserted the next one in the stack. A man's face looked out of the screen at him. The fellow seemed vaguely familiar. Whoever he was, he needed a shave.

Then Van's boredom and faint contempt fell away, for the image declared, "I am Roupen Hovannis, External Affairs Director, Survey Service. If you are viewing this, I will be dead. If I were alive, it would be none of your damned snooping business, I promise you that."

Hovannis's laugh was full of scorn. Van Shui Pong felt anger rise in him, but made no move to kill the floppy. Hovannis had hooked him, sure enough. His eyes narrowed at what he saw, then went wide.

The reports, the screaming headlines and lead stories, kept coming in from all around the Federacy. Paulina Koch declined any comment for as long as she could, and for a bit longer than that. Each morning, more camera crews appeared outside Survey Service Central. Each morning, she strode past them as if they did not exist, and went in to do her job.

Roupen Hovannis had buried his bombshells to avenge himself on her if she played him false. She had thought he would, and rooted from the computer several "dead-man" routines designed to spill information on word of his demise. Either she missed some after all, or Hovannis had given copies to people to throw in the mails. It did not matter much, either way.

She even saw the irony of her predicament. The bombshells were going off without proper cause: surely Hovannis had not expected he would die at Sabium's hands instead of hers. That did not matter much any more, either. What mattered was that everything was coming out, from the disposal of Isaac Fogelman to the destruction of the *Clark County* to the effort to change Magda Kodaly's credit records. And everything pointed straight back to her.

Still, she dared hope one day when she noticed a gap in the ranks of reporters in front of the Survey Service offices: were they getting tired of hounding her? Then she noticed the two men standing there, waiting for her to arrive. They wore the field-gray of the Rehabilitation Service. Not even reporters, the Chairman thought grimly, wanted to get close to rehab men.

She squared her shoulders. No point in hoping now. The only thing left was choosing how she went out. No point in whining either, not in public (what would happen after the rehab men took her away was something else again).

"May I make a statement?" she asked the taller man in gray.

She had the small satisfaction of seeing she had surprised him. She cherished it; she would get no more satisfaction for a very long time. After a moment, he politely dipped his head in assent. In public, rehab men were always polite. He did not even tell her to keep it short.

She turned to face the cameras for the last time. "Citizens of the Federacy," she began, and almost stopped in de-

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spair. How could she get across what she had tried to accomplish by doing as she had done? Only the thought that she would never get another chance helped her go on.

"Citizens of the Federacy," she said again, this time more firmly, "for two decades I have had the privilege of serving you as Chairman of the Survey Service. Throughout that time, I have striven to make the Service function as effectively as possible in all areas of its operation. On the whole, I believe I have been successful in that undertaking.

"In administering so large an organization, I have been required to make large numbers of decisions and judgments. In making them, I have tried to follow the principle of seeking only what was best for the Survey Service. Inevitably, I fear, not all decisions and judgments I was called upon to make have proven correct. That appears to have been the case in the matter of Bilbeis IV.

"I regret any injuries that may have occurred as a result of my decisions concerning that matter. I would remind you, however, that those decisions and judgments were made in what I believed at the time to be the best interests of the Survey Service, and to protect it from those who would seek to curtail its activities where no good cause exists.

"I am to be Chairman no longer, but the Survey Service will remain, and will continue to perform its appointed tasks. I call on everyone, those who have supported me and those who did not, to put behind them the bitterness of the recent past and to support the organization I have been proud to lead for so long. That organization and its ideals must go forward, whatever becomes of me."

Her control held to the end. She had not been sure it would. She nodded to the rehab men. They moved in to take places on either side of her, two tall gray figures bracketing one short one, and led her away.

Stavros watched Paulina Koch disappear into the Rehabilitation Service groundcar. Then he ran the tape back to listen again to her parting statement. He shook his head wonderingly. "She's still talking her way around this whole thing. Some of her decisions weren't correct . . . injuries may have occurred. She ordered people dead. That's enough to create a little bitterness, wouldn't you say?"

"Yes," Magda said, but somehow the triumph she felt was muted. In stories, once the villains were gone, everyone proceeded to live happily ever after. Here and now, the trouble they had caused would go on being trouble. "The Purists are going to have just the kind of field day with the Service she started the stinking cover-up to prevent. The more she tried, the deeper she got."

"She should never have tried in the first place." Stavros thought for a moment. "Is *hubris* a word in Basic, or just Greek?"

"Basic too." On the screen, the rehab wagon purred away again. A commentator started making predictions about how the Survey Service would fare under the interim administration of Dr. Cornelia Toger. Magda switched him off. She could make her own predictions there: "The Service'll have a hell of a time. Toger's in way over her head.

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Maybe Sabium could straighten out this mess, but then she'd have the time to do it."

"So she would." Stavros's eyes got a faraway look. "I wonder what Bilbeis IV will be like, the next time the Survey Service checks it out."

"Now there's something to think about," Magda agreed, "but thinking won't take you far enough, I'm afraid. Sabium may still be around when the next survey team arrives, but you and I, my rather dear, won't be."

"Isn't that the truth!" Stavros chuckled. " 'My rather dear,' eh? I rather like that." He gestured toward the screen. "Have you seen all you want of that?"

"Yes. We recorded it, so I can watch it again whenever I want."

"You have quite a taste for revenge, you know that? You'd make a good Greek; some of the feuds back in the mountains of New Thessaly got their start on Earth, or so the old men say."

"I like to be right, and when I am I don't like anybody telling me I'm not. Speaking of which—" Magda went through the file of floppies and tapes she had brought off the *Hanno*. She ran one into a terminal, put on headphones, and started listening. Every so often, she made a tally mark.

"What are you doing?" Stavros asked. When she paid no attention, he pulled one earpiece away from her head and repeated the question.

She hit the PAUSE button. "What do you think? I'm going to find out who really owed fifty to whom. And if you owe me, by God, I'm going to collect!"

Sabium already had the desert scout's report nearly committed to memory, but she read it again all the same. A troop of scouts had gone north from Mawsil into the waste before the strangers departed the city. They shadowed them at the greatest possible distance, to learn what they could. Two did not return. The goddess had never learned to accept losses in her service easily. She made sure the scouts' families were provided for, but silver could not replace a man.

The rider whose words she was studying had not actually tried to stay close to the strangers at all. Instead, he'd almost killed his mount rushing far to the north, reasoning that the strangers, with their curious abilities, might be able to travel more quickly than they had shown. She made a note to reward him for his initiative.

He was soon proven right. They disappeared from their camp not long before dawn one night, with only briefly blotted stars to suggest something had swooped down from the air and carried them off. Most of the scouts came back then, baffled and afraid.

From a long way away, the one clever scout saw a flying sphere ("a ship, I would call it, not a creature," Sabium read, "for it had no wings") dash itself headlong into the side of a vertical bluff. But it did not tumble in ruins. Instead, it flew *into* the bluff, as if that were so much air.

Indeed, it might have been so; later, the scout saw people emerging from the rocks and then going back inside, with no sign of any passageways or doors to explain how they did so. They did not spot him in turn; his mount was tethered behind an enormous boulder, while he himself moved only on all fours, and

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wore the skin of a skulking desert predator across his back.

He waited the day away in the shade a large bush gave. "Without it," he wrote matter-of-factly, "I would have died. But seeing that the strangers concealed the use of their powers under cover of darkness, I thought it best to wait for night to come."

His patience was rewarded, for about halfway through the first evening watch, the mesa he had been studying shimmered and vanished, to be replaced by a dark sphere many times vaster than the one the scout had seen before. Sabium tried to visualize the scene he described.

"By some art I cannot fathom, it rose silently into the air, as the smaller one had flown before. But it climbed straight up into the heavens rather than faring north or south, east or west. As it ascended, it appeared smaller and smaller, or so I judged by the stars it hid from sight. In the end I lost track of it; it must have grown too tiny to cover them any more. You in your wisdom, goddess, may know its destination. As for me, I am but a simple soldier, and would not presume to guess."

A disingenuous soldier, Sabium thought as she set down his report. She could only guess where the sky ship was going herself; the strangers who crewed it had been close-mouthed, most of them. All her guesses, though, were full of marvels.

She wondered how long she would have to wait before the strangers came to call upon her land again. As long as the time between their first two visits? That would try, even a goddess' patience.

She looked up to the roof, and in her mind's eye through it, to the dome of the sky above. Once more she tried to see a huge sphere floating upwards. She wondered how much her people would have to learn, to build such a sphere for themselves.

She made herself a promise, spoke it aloud as if to seal it: "If they wait so long again, I shall go to visit them first."

She summoned her new majordomo and began to work to make the promise real. ■

●We know the prodigality of nature. How many acorns are scattered for one that grows to an oak? And need she be more careful of her stars than of her acorns?

A.S. Eddington

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the reference library

By Tom Easton

Kindred Spirits, Jeffrey M. Elliot, ed., Alyson Publications, Inc. (P.O. Box 2783, Boston, MA 02208) $6.95, 262 pp.

Worlds Apart, Camilla Decarnin, Eric Garber, and Lyn Paleo, eds., Alyson, $7.95, 288 pp.

Dreams of an Unseen Planet, Teresa Plowright, Arbor House, $17.95, ? pp.

Blood of Amber, Roger Zelazny, Arbor House, $14.95, ? pp.

Antares Dawn, Michael McCollum, Ballantine/Del Rey, $2.95, 320 pp.

The Blossom of Erda, L. A. Taylor, St. Martin's, $16.95, 247 pp.

The Serpent Mage, Greg Bear, Berkley, $3.50, 343 pp.

Cahena, Manly Wade Wellman, Doubleday, $12.95, 182 pp.

The Hercules Text, Jack McDevitt, Ace, $3.50, 307 pp.

The Ecologic Envoy, L. E. Modesitt, Jr., TOR, $2.95, 287 pp.

Northshore, Sherri S. Tepper, TOR, $14.95, 256 pp.

Universe 16, Terry Carr, ed., Doubleday, $12.95, 181 pp.

Much of the point of SF is its openness. That is, though individual stories may be as politically, sexually, or morally reactionary as anything from Jerry Falwell or the John Birch Society or the Ku Klux Klan, right beside them in the magazines and original anthologies or on the book rack, cheek by jowl, you will find flamingly liberal stuff. Sometimes the two poles of thought are even expressed in one author's work.

I find this delightful. It gives our favorite field of fiction a variety that is lacking everywhere else, where editorial ideologues of a hundred stripes preselect what their customers will read, and where the ideologues who are the customers are quite happy with their monotonous diet. It is one of the things that makes SF mentally stimulating, for it means that, whatever our biases, we will be challenged. It is one of the things

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that makes SF a fitting literature for the young, for—like a good college or even high school—it offers them a wealth of alternative *weltanschauungs* to try on vicariously.

It is thus aggravating to find editors who are trying to make SF serve ideological goals. It is also dismaying, especially when the resulting books, by their cover art, belong on the "muscle and twat" shelf of your local adult book store.

Forgive me. I'm talking about **Kindred Spirits,** edited by Jeffrey M. Elliot, and **Worlds Apart,** edited by Camilla Decarnin, Eric Garber, and Lyn Paleo. Both are anthologies of gay and lesbian (sic) science fiction, and together they contain a wealth of excellent stories by Pangborn, Scortia, Russ, Lynn, Silverberg, Salmonson, Gerrold, Tiptree, Bradley, Varley, Delany, and more. Unfortunately, their lack of openness and variety makes them a pair of bores.

This is, of course, a hazard of all theme anthologies. But where most theme anthologies allow both pro and con statements, the basic criterion for inclusion in these books seems to have been not just tolerance for, but outright approval of homophilia. This gives them a shrill tone, which detracts from the quality of the individual stories and thus weakens the books.

I do think I would say the same things were I a homophile, or even a homophile-phile, but my opinion may owe something to the fact that I do not share the editors' ideology. I do not approve. I do tolerate. Perhaps more to the point, I think one's preference in sex objects (whether it is others of the same gender, Two-Ton Tessies, jockeys, or dogs) is largely irrelevant to one's humanity.

With **Dreams of an Unseen Planet,** Teresa Plowright tackled an immense project and succeeded far less well than she might have. Earth, threatened by ecological catastrophe and imminent nuclear and biological war, sends three colony ships off to the newly discovered world of Gaea, the only known world other than Earth that might possibly support human life. One colony ship, the *Ventura*, represents the U.S. and Canada. A second, the *Heng Hsing*, is from China. The third is the *New Soviet*.

On arrival, the colonists find Gaea a lifeless, forbidding world whose red clouds their arrival sparks into a constant storm of static that blocks all communication between colonies or with Earth. Worse yet, even though the colonies are self-contained units (space-going arcologies), something about Gaea penetrates to the life in the colonies. Crops fail to grow. People fail to conceive, even when the colony manipulates their hormones and organizes mass orgies in the name of fertility. Driven to despair, the *Heng Hsing*'s colonists murder the *New Soviet*'s inhabitants and return to a battered Earth, while the people from the *Ventura* struggle on.

In this setting, we meet Miera. Older than her fellow colonists, she works in the greenlabs, where she has found one type of plant—air plants, or epiphytes (such as bromeliads and Spanish moss)—that can thrive. Yet she is excluded by her fellow greenlab workers, including her erstwhile lover, who seem to be developing a group mind based on a sort of embryonic telepathy. Too, she suffers from disturbing "red dreams."

In due time—and not at all to our surprise—we learn that Gaea is alive, as is Earth, and that reproduction depends on a psychic attunement to the environment. Earth-life must re-attune itself, adapt itself, to Gaea to survive,

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and once it has so adapted, it can no longer live on Earth. Taken literally, this strikes me—a materialist—as so much mystical claptrap. I can accept it as a metaphor for the process of adaptation, which acts across many generations and affects not individuals but populations or species, familiar to all biologists, but I bridle at Plowright's literalism.

My philosophical objection, of course, has nothing to do with Plowright's success or lack of success at the task she set herself. When I say she failed, I refer to other things—the adjectivitis verging on the purple; the sheer boredom of her introspective romanticism; the utter, unlikely arbitrariness of her characters; the simplicity of her solutions. I suspect she will appeal much more to readers of the women's magazines than to *Analog* readers.

Roger Zelazny's **Blood of Amber** is distinctly better than its predecessor, *Trumps of Doom*. The latter ended with hero Merle Corey, son of the vanished Corwin (of the first *Amber* series), trapped by Luke, the villain he thought was his friend, in a cave that blocked all his magical powers. *Blood* opens with his escape, thanks to thugs sent to finish him off, and we soon learn that the complications are only beginning. There are Luke's mother, with her own wicked machinations; a sneering wizard; a mysterious soul that jumps from body to body in pursuit of Merle; plots and counterplots and counter-counterplots. And in the background lies the Ghostwheel, the super-computer Merle built in a strange dimension because the physical laws of our own, or of Amber, would not let it work. I suspect this filial intelligence will prove to be behind many mysteries.

And, of course, Merle winds up in trouble again. This time the soup looks a lot like tea, for somehow his world has transmuted into something out of *Alice*, but we have faith. I balked at *Trumps* because Zelazny had made the soup *too* hot. But with *Blood*, he proves anew his ability to pull rabbits out of his hat. Better, perhaps, he underlines the proof by setting a stage for Book 3 that will force him to make the next one a white rabbit.

Michael McCollum is a very straightforward writer, without flash and dazzle, although he has had some impressive ideas, as in *Life Probe*. His latest lacks even those.

Antares Dawn tells us that by the 26th century, humans will have discovered the technique of instantaneous travel among those stars that happen to be linked by "foldlines." Unfortunately, when Antares goes nova, the sole fold-point that opens into the Altan system is destroyed. The Altans must survive in isolation from human civilization for over a century. At the end of that time, their fold-point reopens, and through it plunges a battered, lifeless Earth battleship.

Clearly, there is war in the galaxy. The Altans decide on a cautious exploration, led by Richard Drake, staffed by politicians, scientists, merchants, and other representatives of Altan civilization. Their first stop reveals a nuked world and, buried in the bowels of a university library, records that reveal the enemy to be aliens. The second stop shows us what happened to the refugees from the disaster—they have formed a monarchy, and they are on constant alert against the alien wolves beyond their fold-point.

There are some nice touches here, from McCollum's portrayal of the hazards accompanying an exploding star

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light-years away to his vision of the effects of reshuffling transport routes. But the political backbiting is conventional, and the romantic interest—the niece of the hereditary Terran ambassador is almost engaged to an ambitiously slimy political aide, but then she meets Drake—is predictable. Overall, the tale is so pedestrian that I was repeatedly tempted to chuck it.

Judging from the tale's conclusion, there will be at least one sequel.

L. A. Taylor's **The Blossom of Erda** is much better. Maele Sorenlon, sole female Senior Officer in the Link Services, the military and exploration arm of a human civilization centered on the world of Erda and apparently derived from colonists from elsewhere millennia before, receives mysterious orders requiring her to travel via a specific ship to a moon being terraformed for eventual human habitation. She will choose a companion from the ship's crew, and that companion will fit such criteria that she really has no choice at all: the only acceptable aide is SanDreleccür, a variant human whose skin bears chloroplasts and whose mind can supposedly read others. On arrival at Regel, the moon, she will proceed to check the progress of the terraforming and stock a number of new organisms. The mission is innocuous; the imposed requirements arouse suspicions, and those suspicions become concrete indeed when Regel proves to host a number of unlisted hazardous plants and animals, apparently stocked just to do in Maele and Drel.

Taylor has written mysteries, and it shows. Yet she does not conceal the source of the problem. Behind Maele's and Drel's troubles is a high officer of the Service, who wishes to remove all possible threats to his plan to take over the works. Regel is indeed a deliberately murderous trap.

Fortunately, Maele, once known as "Glacier Man," melts into the arms of the one individual she recalls fondly from their days at the Service's academy. The mental bond they then form, in the mode of Drel's people, aids their survival, and eventually their delivery of the villain's comeuppance.

What makes *Blossom* better than *Antares* to my mind? Maele is indeed a stereotype—the butch who turns feminine for the right man—but Taylor fleshes out her characters more deftly than does McCollum, and she has an eye for the clash of gender roles. She also lets her sense of humor show; she never made me laugh outright, but I smiled often.

Some time back, I praised Greg Bear's *The Infinity Concerto* and on its strength recommended its sequel, **The Serpent Mage.** That sequel is now available, and I am delighted to report that it does not disappoint. It is just as marvelous as *Concerto,* if in a slightly different way.

Serpent opens with Michael Perrin—executor for the estate of the half-Sidhe Arno Waltiri, the composer whose Infinity Concerto transported people from Earth to the Realm of Faery; the hero who was trained in the Realm to defeat the villainous Clarkham—back at home, on Earth, reluctant to take up Waltiri's task, coming to terms with his new talents. And then, suddenly, the refugees begin to arrive from the Realm. That pocket cosmos, created by the greatest of recent mages, is disintegrating with the mage's death. If something is not done, the disintegration will spread to Earth, and all will die.

Fortunately, Michael doesn't know

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all this at once. He takes up his executory responsibilities, falls for Kristine, a reluctant musicologist, and learns that Clarkham is not—quite—dead. His talents strengthen. He meets the Loch Ness Monster, last representative of the original humanity, 60 million years old, who stole the Sidhe's souls, and refuses temptation. He helps Kristine mount another performance of the Infinity Concerto, paired with a new orchestration of Mahler's unfinished Tenth, and learns that now the time is ripe for music to heal the rift between Earth and Realm.

And then Clarkham steals Kristine and forces Michael to embrace his destiny. His task is to return all the artistic geniuses the Sidhe have stolen from humanity—Mahler, Mozart, and 5,000 more—over the ages, to become a maker of worlds, to seize the Serpent's ancient knowledge, tainted though it might be, to confer with cockroaches, transformed descendants of the original world-makers, and to save Earth and reconcile humanity with its foe of yore.

It's a thrusting, soaring tale, best compared to a shoot erupting from the ground to grow, reaching for the sky, to become a tree. It is Bear, redefining reality as few other fantasts—and none of recent vintage—have dared. It is the most satisfying, most original fantasy you will see this year, and probably next. It is, quite simply and definitely, a "Don't miss!"

We have another "Don't miss," in a more familiar vein, with the late Manly Wade Wellman's **Cahena.** This is not a tale of Silver John or any other of Wellman's patent, delightful folky heroes. Instead, it is the tale of an ancient North African warrior queen, the Cahena, whose Moorish troops fought off the Moslems until an invidious traitor induced the Cahena to order her land's life-support systems—orchards, fields, and towns—destroyed to deny the enemy his potential spoils. Unfortunately, this step estranged her people and the magic that supported her and them in their world. Powerless and abandoned, she was conquered.

The tale is told by Wulf, a kind and gentle Saxon Conan who had advised the Cahena in war, fought for her, and loved her. The time is many years later, in the tent of Charles Martel, a Frankish general opposing a different Moslem horde. Wulf is instructing in tactics, proving how much he knows of Martel's foe, and striving for a place in the front lines where, if he is lucky, death will erase his painful memories. Yet the point is something more. *Cahena* is a historical novel, yes, and it has enough touches of fantasy to justify its coverage here. But it is also a cautionary morality tale, a message to rulers everywhere who ignore the elemental concerns of their peoples. It is, perhaps, addressed specifically to Washington, with its perennial short-sheeting of our environmental bed.

Jack McDevitt's **The Hercules Text** is the latest of the new generation of Ace Specials, selected by Terry Carr. Its Special-ness means that it is supposed to be in some way innovative, in story, in treatment, or in ideas. If it fails—well, Carr admits in his introduction that it is much like many another novel dealing with the first reception of radio signals from another world but assures us that McDevitt is a smoothly accomplished novelist who puts heavy attention on the moral implications of his tale.

I won't argue. I don't think *The Hercules Text* will win any prizes, but the tale is well told, the plot is well organ-

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ized and well elaborated, and the characters are well fleshed out. On the other hand, McDevitt *is* a mite predictable —when protagonist Harry Carmichael, the sympatico Goddard administrator, loses his wife early in the tale, we just *know* that the first gal to enter the story will turn out to be the new love interest.

To set the scene, McDevitt tells us that super-telescopes have shown us how alone we are: Many stars have planets, but all those in stellar "life zones" are barren; Earth is unique in its hospitableness to life. And then, one day, the radio astronomers at Goddard find that a pulsar has stopped pulsing. After a suspicious interval, it restarts, and then it begins to send a clearly coded signal that turns out to be a self-booting computer program. Further investigation shows that the pulsar may well be an artificial creation.

The astronomers call in the experts, including one cosmologist who is a Catholic priest. The exhilarating news that we are not alone gets out, but the feds promptly clap a security lid over the details, on the grounds that the message may reveal new super-weapons. And they are right. As the decoding of the signal gets under way, marvels emerge. There is a way to tap the planet's magnetic field for energy, which the feds promptly grab to power "Star Wars" lasers. There is a recipe for making black holes to destroy cities. There is new technology for genetic engineering. And so on. The aliens are revealing all their secrets.

Most of the story's action is verbal, intellectual, abstract. McDevitt downplays the physical, restricting it to a little byplay between Harry and his estranged wife and his diabetic son; a little more between Harry and the project psychologist; a riot on the Goddard steps, when a fundamentalist preacher tries to have his say; and a final flourish of cloak and dagger that tries to resolve the tale's basic moral issue. That issue is essentially that of the scientific conscience, born at Hiroshima: Are there topics humans should not study, things that should be kept secret, at least until our species is more mature?

McDevitt's point seems to be that in an ideal world scientists should be free to work as they please. But they should not give all their results to governments, which tend to be barbarous. Nor should they destroy their results, for that, in essence, robs the future of its options.

The answer is to hide potentially dangerous information. But who should be the guardian? The answer to this question is inherent in the characters McDevitt has chosen to carry much of the weight of his moral, and if the answer seems a tad trite, that may not be avoidable. I challenge you to read this one and come up with a better answer.

Far less ambitious is **The Ecologic Envoy,** by L. E. Modesitt, Jr. The setting is a far-future human civilization consisting of an Empire and a number of outlying systems that established their independence a couple of centuries before, when bio-weapons devised and spread by the Ecolitan Institute of Accord devastated the Empire's worlds, notably including Earth. Now the Empire, out of a residual fear of exposure to the outdoors and the plagues it may bear, lives in towers and caverns. And in pursuit of its hegemony, for the sake of trade and wealth, it is subverting and conquering the independents, first creating excuses by inviting them to trade talks, blocking all possible progress with intrigue and assassination, and then blaming the obstructionism on its victims.

Accord is next. Fortunately, Accord

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has the sense to send Nathaniel Firstborne Whaler—professor of the Ecolitan Institute, spaceship pilot, commando—as its envoy. And Whaler has a certain way with assassins, secret agents, and intrigue. It doesn't take him long to cut through the obfuscations and force the Empire to take the trade talks seriously, and then to win surprising concessions. He even finds time to pick up a true love.

This light tale owes everything to the layers of intrigue Modesitt carefully—if confusingly—constructs. Characters are thin, motives murky, and events clearly arranged to advance the plot at the author's whim. Most annoying, the idea of ecological war is little more than a buzzword in the background. Whaler has a bio-weapon or two, and he uses them to good effect, but they have little to do with ecology. I can't help but think that the Ecolitan Institute could learn a great deal from a meeting with George R. R. Martin's Haviland Tuf.

After thirteen novels, Sherri S. Tepper gets her first hardcover with **Northshore,** opening the two-volume *The Awakeners*. And she deserves it. The world of *Northshore* has two continental masses separated by a 2,500 mile wide "World River," in which tides move constantly in one direction, propelling the boats of commerce. Reflecting this movement, the towns along the river permit the movement of people only westward; guarded gates block return movement to the east. The Awakeners of the series title are a religious group that uses a fungus to stir the unworthy dead to a pseudo-life as zombie workers; eventually, the fungus permeates their bodies and they become food for the world's indigenes, sentient flyers who long ago devoured the local herd-beasts. In return, the flyers both leave the humans in peace and supply an immortality elixir to the religious hierarchy. The arrangement is a remarkable example of inter-species mutualism.

Yet all is not what it seems. The heretical cult of the Rivermen sinks its dead in the river, where they can be safe from the bone-pits that feed the flyers. The flyers are deeply antipathetic to humans. The religion proves to be a sham overlying a long-range Plan. Conspiracy is rampant.

The pattern emerges slowly. Tepper begins with the boatman Thrasne, a woodcarver who has long dreamed of a certain ideal woman. And then he meets her, turned to wood by the blight, a disease of the river, yet living slowly, repeatedly stretching the words "My baby!" over months of agony. He finds her baby, Pamra Don, an Awakener and a true-believer, and when she learns too much of the truth and rebels, throwing the flyers into fits of suspicion and panicking the religious plotters, he brings her on board his ship, hoping for love, settling for coexistence, ending with . . .

I skip so much. The plot is rich with cross-threads and detail. The characters come alive. The whole is imbued with a marvelous sense of dream, like the best of fantasy. Yet it is definitely SF, with naturalistic explanations for everything, and it may prove as worthy of awards as Joan Vinge's *Snow Queen*. Don't miss.

Terry Carr's *Universe* is the last surviving original anthology series for one good reason: Carr consistently delivers an excellent mix of stories. And **Universe 16** is no exception.

Consider the lead story: Ronald Anthony Cross's "Hotel Mind Slaves" is an excellently imagined piece. If it is not quite to my taste, that is because it

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tends to the coy in its exposition of a decayed civilization whose immense hotels, containing miles of corridors and vast halls dedicated to mimicking vacationland environments, are now occupied by barbarian bands, robotic talking animals, and sentient computers that play god with the inhabitants. The tale centers on Nightglider, whom the Hotel Mind and its self-generated Antagonist would make a pawn via a brain implant that lets him share the thoughts of the Hotel Mind. But he refuses pawnship and finds an exit from the hotel and a new world—a Disney hotel!—across the street. Perhaps fortunately, Cross does not take the reader into that new world.

Consider the book's last, "Voyage South from Thousand Willows," in which Lucius Shepard brings a poetic mind to the task of translating an alien emissary's message. It is easily up to his usual standard, but it expands our perception of his talents, for here he departs from his usual ghosts and jaguars.

Examine Rick Shelley's "At the Flood," in which a warming world and its flooding cities, attended by amphibian aliens, encounter what may be the Second Coming. Consider George Zebrowski's "The Idea Trap," which casts a meaty eye on the artist's role as a nourisher of civilization. Consider Robert Reed's "Treading in the Afterglow," a tale of immortal obsession. Or try Martha Soukup's "Dress Rehearsal," Gary Konas's "What Genius," Robert Thurston's "Was That House There Yesterday?" or Ian Watson's "The Legend of the Seven Who Found the True Egg of Lightning." All good, and though they may appeal best to various tastes, they make the book a very nice buy for anyone who loves short fiction.

By the way, this has been my ninety-first column in these pages. In nine more months, I will be celebrating my "centenary," and I am beginning to wonder how best to mark it. Should I simply say, "Ta-daah!" and leave it at that? Discuss what remains both memorable and available from the first two dozen columns? Or what? Any ideas? (Maybe, if enough of you write in, I can handle the occasion simply by quoting letters —or maybe, if enough of you ask questions, I can just play answer-man.) ■

●One of the major differences between low technology and high technology is the amount of skill it takes to use it.

Rick Cook

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brass tacks

Dear Dr. Cramer:

I am writing to you to mention a small point in your article in the November 1986 *Analog*.

You mention Heisenberg's positivism, the principle that the quantities discussed in the equations can be measured experimentally, saying that this principle and another were developed by Heisenberg to deal with Einstein's "spooky actions at a distance" criticism and similar problems.

In fact, Heisenberg formulated this principle earlier. He used it in his first paper on quantum mechanics, in which he developed a discussion of some simple systems based on using only the frequency and intensity of radiation emitted or absorbed by the system, the observable quantities.

I attended lectures by Born (in Pasadena) before Schrödinger's papers were published, and I made extensive notes about matrix mechanics at that time.

LINUS PAULING

The author replies. . . .

Dear Dr. Pauling:

Thanks for your letter. I am grateful for your comments on Heisenberg's positivism. I agree that the theme of positivism indeed appears even in Heisenberg's first papers on quantum mechanics. My reading of these early papers, however, is that at that time the focus on observables was at the level of working hypothesis rather than an entrenched philosophical position and that Heisenberg was pushed to the latter position by the confrontations with Einstein at the Solvay Conferences in the late 1920s.

JOHN G. CRAMER

Dear Stan,

Sorry I missed the fun in Atlanta; I hear it was a terrific con.

The November issue of *Analog* was

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particularly noteworthy, and I thought two items in particular deserved some feedback. First, please pass on my praise to Michael F. Flynn for his novella, "Eifelheim." As you know, good, hard science and literate science fiction are a rare combination, and "Eifelheim" does it very well indeed. As near as I can tell, the physics in the story is right out of current journals. In fact, the timing might be right for a part of Flynn's story to have been inspired by one of John Cramer's columns from last year. Too bad the Asimovian "psychohistory" doesn't really exist, as well, for the field that presently uses that name is very pale by comparison. Flynn's name doesn't ring a bell with me, so if he's a newcomer, there's all the more reason to hope you have more from him in inventory.

On the other tentacle, Richard Hoagland's face-saving science fact article is a wonderful continuation of the Campbell *Astounding/Analog* tradition. Humanoid faces and cities on Mars seem to rank right up there with the "Dean Drive," the "Flanagan Neurophone," and Scientology. Of course, as per your editorial, I'll try to keep an open mind; I wouldn't want to have egg on my face before all the data are in. Curious, how the "optimist" Carl Sagan, as cited in Flynn's story, is a pessimist in Hoagland's article. We can but hope that Hoagland's visage visions will receive a close encounter with a manned expedition in our lifetime.

DR. DEAN R. LAMBE

Dear Mr. Schmidt;

Reader Larry Babb ("Brass Tacks" Oct. '86) observes with ironic surprise that the Eskimos in George Guthridge's story, "Eskimos Solve the Future," are not suffering educationally from the fact that they are bilingual. Do some people actually think that some children would suffer from such a "burden"?

In our area, parents have the choice of sending their children either to unilingual schools where one's mother tongue (usually English or French) is used, or to bilingual ("immersion") schools, where another language (usually French for anglophone children and English for francophone children) is used. The demand for placement is greatest in the bilingual schools, and it is generally believed that the bilingual students perform better and achieve greater scholastic distinction. All four of my children are in such schools—I wouldn't have had it any other way!

MARC A. SCHINDLER

Gloucester, Ontario
Canada

I suspect that Mr. Babb was thinking of the kind of situation where students are being instructed in a language other than their own primary one, without an adequate grounding in the second language. What you're describing is quite different, and I'm delighted to see that programs like that are starting to appear in more and more places. Two nieces of mine are in one that was recently started in the city where I grew up, and my last visit to them gave dramatic proof of how valuable such programs can be. Less than a semester into the first and third grades, these two were already speaking Spanish with a flawless native accent never even approached by most of my high school classmates, and obviously having a lot of fun doing it. Their teacher (a native Puerto Rican) says their classmates are all doing likewise . . . and I'm all for an approach that can produce that kind of result!

Dear Dr. Schmidt:

I am now current and have found

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something in the November issue I wanted to comment on before I had sent in my comments on the October issue. I refer to the running commentary (your editorial of mid-December, 1985, and the subsequent letters by F. M. Busby, Gale Wallis, and D. J. Elden) on the sexist use of language in *Analog*. As a professional linguist who has researched and published a fair amount on "sexist" language, I want to comment on the progress of the discussion in the pages of *Analog*.

First, I congratulate all parties for not blaming the English language. Though it is possible for a language to be inherently sexist (because it necessarily produces sexist speech writing), my research indicates that English is not. This means that sexist shortcomings in English speech or writing are the responsibility of the writer (or possibly of the society as a whole).

Still, there are some problems with the discussion. In communication, where both writer/speaker and reader/listener bear responsibility for the message communicated, your reply to Elden was on the mark. In communication as elsewhere, people are far quicker to see the faults of others than of themselves. Such a problem suggests itself in the letter from Wallis, who requests that you make a test of all the stories you buy regarding their references to women. The request is understandable, as is your reply, but her closing challenges, "Ask any woman. Ask any black" is a rhetorically powerful peroration. However, I am struck by a parallel with those who insisted that the Bible be made non-sexist and proceeded to rewrite everything so that the references to God were non-sex-specific. But did they think to rewrite the references to the Devil? They objected to God being male, but the Devil was acceptable as a man. In short, I would like to challenge Gale Wallis in turn: if you have read Elizabeth Lynn's "feminist" adventures (*The Dancers of Arun*, etc.), have you written to Lynn to offer her the same challenge you extend to Dr. Schmidt (sex-inverted, of course)? For Lynn's tales are not only sexist (here, antimale) in their execution, but far worse, they badly misrepresent both the spirit and intent of aikido.

This problem is not open to a one-time, once and for all solution. First of all, there's probably about twice as much sexism in society as most campaigners realize, and some of it is aimed at men. As a result, what we have here is a problem much like that of rather delicately balanced reactions in organic chemistry: we'll have to keep tinkering and adjusting the balance and hope that we will continue to improve the equity of the situation.

Keep up the good work.

WILLIAM J. SULLIVAN

Gainesville, FL ■

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(continued from page 129)

liners (carrier aircraft) and private planes (general aviation aircraft). In each case, regardless of the facts and the NTSB reports, the general aviation pilot was publicly blamed for causing the accident. In the 1978 San Diego collision, for example, the general aviation pilot was exonerated and the FAA air traffic controller cited as the cause of the accident. This was ignored by the news media. The government was successful in hiding the fact that they settled out of court to the tune of millions of taxpayer dollars in all the lawsuits that resulted from that accident.

And in each case—including, by the way, air carrier vs. air carrier accidents over the Grand Canyon and Staten Island, for example—the federal bureaucracy (the FAA in our example) has overreacted by imposing stricter and more stringent new regulations, often by invoking its "emergency powers" to circumvent the give-and-take of the normal NPRM process.

The American public is tolerant of general aviation . . . provided that it doesn't interfere with airliners.

General aviation pilots—I have been one since 1946—are tolerant of the public's welfare, too. Look, you may be one of 150 pink bodies strapped into that flying cattle car, but I've also got my pink bod strapped into my airplane, and I *don't* wish to suffer the fate of William C. Cramer (no relation to Dr. John Cramer, I hope), the pilot of the Piper Archer over Cerritos. I've seen photos you haven't. The entire top of the Piper Archer was cut off by the DC-9's horizontal stabilizer. The three dead people aboard didn't exist above their shoulders. The coloration seen on the wing of the Archer in released photos wasn't paint from the Aeromexico DC-9; it was blood.

The FAA reaction has been two-fold. One was a public announcement of intent to place even greater restrictions on flight, mandate more equipment in all types of aircraft, and expand "controlled" airspace, all of which would create more traffic than the Air Traffic Control System could handle.

The Cerritos and San Diego accidents, along with many other recent midairs, occurred in controlled airspace in clear weather during daylight hours. The pilots should have been looking out the windows, following the primary rule of "see and be seen;" I suspect they were looking at the mandated equipment on the instrument panel and relying foolishly on someone sitting in a nice warm room on the ground watching a radar screen. (I am alive today not only because air traffic controllers have helped me when things went to worms, but also because I have told them what to do with their instructions which would have flown me into a mountain.)

New regulations won't prevent more midair collisions. The new equipment the FAA wants installed and operated would over-saturate an already saturated system that relies too heavily on that technological wonder, radar. The Band-Aid™ would merely open and infect the wound.

Pilots are not kamikazes; they do not deliberately crash their airplanes into one another. There is no Demolition Derby in the sky.

What the FAA is trying to do at this time in the public arena is comparable to the Department of Transportation

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saying you cannot drive your private vehicle on any interstate highway (which your gasoline taxes have paid for) because it's reserved for commercial trucks, commercial buses, and military convoys.

Well, we'll be able to handle this as citizens participating in the rule-making process.

What we cannot handle is the other side of the coin: The FAA's secret committees (they call them "internal study groups") generating far stronger regulations which would be put into place by means of the "emergency" provisions of the regulatory laws and procedures that preclude citizen or user inputs.

What the federal regulatory agencies are doing—and my FAA situation is only an example—is creating a new form of government quite contrary to the American system which has been such an outstanding success for the past 200 years: "Everything is permitted except that which is forbidden."

They're evolving a system familiar to totalitarian governments—whether they be socialist, communist, absolute monarchies, or one-party types—where the policy is: "*Everything is forbidden except that which is permitted.*" The Soviet Union and its satellites operate this way. That system of government has been demonstrably less successful in providing for the safety and well-being of its citizens.

My apologies. I told you I'd discuss political science, but I ended up writing mostly about political technology—i.e., how to do things, not why.

Very well, why? Question: Since the United States government always reacts to what happens elsewhere, is its basic goal now this: "Whatever any other government does, we can and will do it bigger and better." After all, the American way is to do everything bigger and better than anyone else, isn't it?

Including overreacting. ■

● I do not value any view of the universe into which man and the institution of man enter very largely and absorb much of the attention.

Henry David Thoreau

● No state has an inherent right to survive. It must earn its right to survive from time to time. The same is true of people.

Kelvin Throop III

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a calendar of analog upcoming events

2-6 July
WESTERCON XL (West Coast SF conference) at Convention Center, Hyatt Regency, Oakland, Calif. Guest of Honor—Gregory Benford, Fan Guest of Honor—Aubrey MacDermott, Filksing Guest of Honor—Leslie Fish, Artist Guests of Honor—Lela Dowling & Ken Macklin, TM—Jon de Cles. Registration—$40 until 31 May, $45 at the door. Info: Westercon 40, Box 28427, San Jose CA 95159. (408) 998-0264.

3-5 July
MAPLECON 9 (Ottawa area SF conference) at Ottawa, Ontario. Guest of Honour—Marion Zimmer Bradley, Artist Guest of Honour—Guy Frechette, Fan Guest of Honour—Bink. Registration—$15 until 31 May, $20 thereafter. Info: Maplecon 9, Box 3156, Stn D, Ottawa, Ontario, Canada K1P 6H7. (613) 741-3162.

3-5 July
INCONJUNCTION VII (Indiana SF conference) at Adams Mark Hotel, Indianapolis, Ind. Guests of Honor—Jack Williamson & Andrew Offutt, Special Guests—Frederik Pohl, Timothy Zahn, TM—Arlan Andrews, Fan Guest of Honor—George Laskowski. Registration—$15 until 1 June, $20 at the door. Info: InConJunction, Box 19776, Indianapolis IN 46219. Include S.A.S.E.

10-12 July
LIBERTYCON I (Tennessee SF conference) at Sheraton City Center Hotel, Chattanooga, Tenn. Guests of Honor L. Sprague and Catherine DeCamp, Artist Guest of Honor—Vincent Di Fate, MC-Bob Tucker. Registration—$15 until 15 June, $20 thereafter. Registration limited to 750. Info: LibertyCon 1, Box 695, Hixson TN 37343.

17-19 July
OKON '87 (Oklahoma SF conference) at Sheraton Kensington Hotel, Tulsa, Okla. Guests of Honor—C.J. Cherryh & Wilson Tucker, Artist Guest of Honor—Real Musgrave, Fan Guest of Honor—Jan Howard Finder, TMs—Lee & Pat Killough. Registration—$11 until 24 June, $14 at the door. Info: OKon '87, Box 4229, Tulsa OK 74159.

17-19 July
UNICON '87 (Annapolis SF conference) at the Holiday Inn of Annapolis, Annapolis, Md. Guest of Honor—David Brin, Artist Guest of Honor—David Mattingly, Fan Guest of Honor—Marty Gear. Registration—$20 until 30 June, $25 at the door. Info: UNICON , Box 7553, Silver Spring MD 20907.

27 August-2 September 1987
CONSPIRACY '87 (45th World Science Fiction Convention) at Metropole Hotel & Conference Centre, Brighton, U.K. Guests of Honour—Alfred Bester, Doris Lessing, Arkady and Boris Strugatsky; Fan Guests of Honour—Joyce and Ken Slater; Artist Guest of Honour—Jim Burn; Special Fan Guest—David Langford; TM—Brian Aldiss. Registration—Attending £30, $55; Child Attending £15, $27.50; Supporting £10, $15. Rates in effect until 1 April; rates afterwards and at the door higher but not announced as of press time. This is the SF universe's annual get-together. Professionals and readers from all over the world will be in attendance. Talks, panels, films, fancy dress competition, the works. Join now and get to nominate and vote for the Hugo awards and the John W. Campbell Award for Best New Writer. Info: ConSpiracy '87, Box 43, Cambridge CB1 3JJ, England, U.K. OR Bill & Mary Burns, 23 Kensington Court, Hempstead NY 11550 OR Justin Ackroyd, GPO Box 2708X, Melbourne, Vic. 3001 Australia.

—Anthony Lewis

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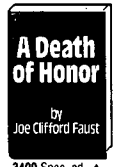

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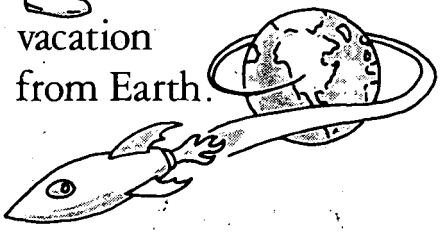

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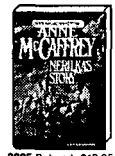

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